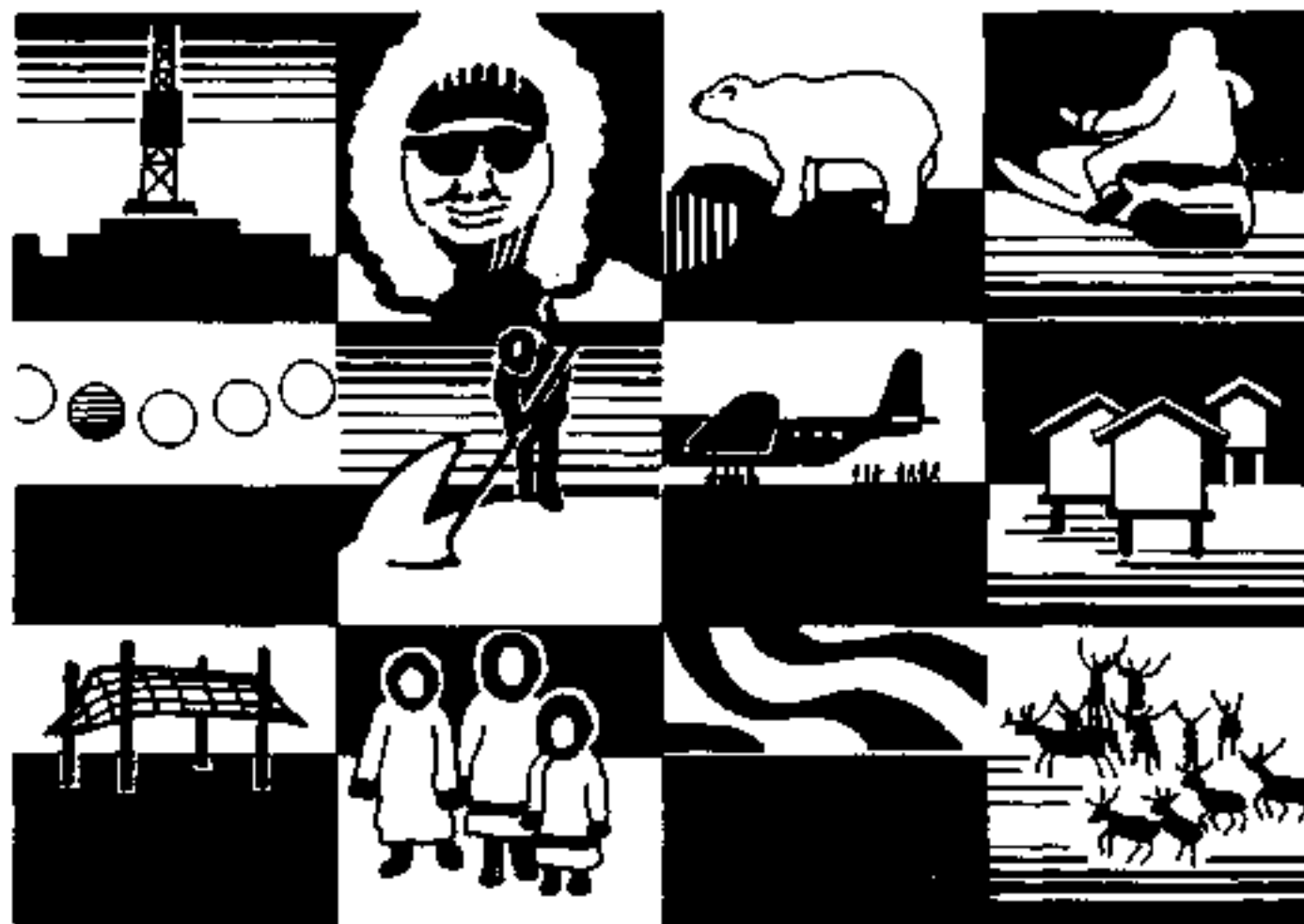


**North Slope Borough  
Coastal Management Program**

**Areas Meriting Special Attention**



**Phase 1 Report**

**June 1989**

**North Slope Borough  
Coastal Management Program**

**Areas Meriting Special Attention**

*Prepared By:*

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**Hunter Environmental Services**

**PHASE 1 REPORT  
JUNE 1989**

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# INTRODUCTION

## 1.1 AREAS MERITING SPECIAL ATTENTION AND THE NORTH SLOPE BOROUGH CMP

When the NSB Coastal Management Program was being prepared during the period of 1982 through 1985, public hearings were held in villages within the Borough to obtain guidance on program preparation. Much of the planning effort focused on the western part of the borough, because no previous work had been conducted there before. During the public meetings, some areas of special concern were identified by village residents, primarily because of their importance for subsistence, cultural resource site, and fish and wildlife concerns. However, at that time, there were few specific resource development projects that had been identified that would potentially cause conflicts with local residents.

Two areas were included in the concept approved draft of the CMP as candidates for Areas Meriting Special Attention (AMSA): Cape Thomson (south of Point Hope) and Kasegaluk Lagoon. Cape Thomson was identified due to its value for seabird habitat, cultural resource values, and potential as a port site for the Red Dog and other mining projects. Kasegaluk Lagoon was identified for its importance for beluga whale and other marine mammal habitat, and subsistence importance to the residents of Point Lay. It was the Borough's intent to identify these areas as potential AMSA's, and pursue the AMSA planning process after the Borough Coastal Management Program received approval from both the state and federal governments.

In the last few years, two major development projects have been proposed in this general area, primarily in the vicinity of Point Lay and Kasegaluk Lagoon: development of coal deposits on ASRC lands, and offshore development associated with the federal OCS sale in the Chukchi Sea. These projects have reinforced the need for additional planning, to help the Borough and village residents balance traditional uses with resource development.

In addition to these two areas, the Borough has long considered the Colville River Delta as an area appropriate for nomination as an Area Meriting Special Attention. It provides important and productive habitat for many fish and wildlife species. Residents of the village of Nuiqsut and other Borough communities use the Colville River Delta throughout the year for subsistence harvest activities, particularly for fish and marine mammals. The delta and surrounding uplands have been the subject of past petroleum exploration activities, with three wells drilled and fourth proposed for this winter. There is speculation that a potentially commercial quantity of oil was discovered during drilling. The Colville River delta is roughly three miles from the boundary of the Kuparuk field, and is included in a state oil and gas lease sale, scheduled for June of 1991.

## 1.2 WHAT ARE AREAS MERITING SPECIAL ATTENTION

Areas Meriting Special Attention (AMSA's) are areas singled out during coastal management program development for detailed planning. As defined in the Alaska Coastal Management Act (AS 46.210(1)), AMSA's are:

*"A detailed geographic area within the coastal area which is sensitive to change or alteration and which, because of plans or commitments or because a claim on the resources within the area delineated would preclude subsequent use of the resources to a conflicting or incompatible use, warrants special management attention, or which, because of its value to the general public, should be identified for current or future planning, protection, or acquisition."*

Acceptable reasons for designating AMSA's are identified in the Alaska Coastal Management Act (ACMA) and the Alaska Coastal Management Program regulations. Any person, federal or state agency, or local government may recommend AMSA's. Coastal Management Districts must consider recommended AMSA's but are not bound to accept an AMSA as nominated. Final decisions on AMSA designations are made during program review by the Coastal Policy Council, which considers state and federal agency comments at that time. AMSA's have also been used to resolve conflicts between uses of different resources or to protect single purpose values of public importance when other coastal management tools are not adequate.

- Conflict Resolution. AMSA's are appropriate for areas where uses of important resources may conflict. Designation as an AMSA will address conditions that reduce conflicts between uses, particularly if several different resource managers or owners are involved.
- Management Coordination. The North Slope Borough Coastal Program can use AMSA status to recognize and coordinate existing management controls of state and federal agencies. AMSA's can also be used to emphasize the Borough's desire to participate in relevant planning projects that are being conducted in the area by federal, state and private concerns.
- Resource Allocation. There are areas and resources which are highly important to local residents because they are scarce or irreplaceable. Development in these areas should be accomplished expeditiously but further evaluation of the areas resources may be necessary to guarantee that they are utilized in the most efficient manner.

### **1.3 STUDY OBJECTIVES**

Now that the North Slope Borough Coastal Management Program has received approval from both the state and federal governments, it was considered appropriate to initiate preparation of Area Meriting Special Attention Plans for Kasegaluk Lagoon, Cape Thompson, and the Colville River Delta. The NSB obtained funding this fiscal year to begin preparing AMSA plans for these three areas.

The AMSA process has several requirements, and must provide the following information:

- basis for designation
- map showing the location
- description of the area
- existing ownership and status of the area
- existing ownership and status of the adjacent area
- present and anticipated conflicts
- management plan

Preparation of the North Slope Borough AMSA project is being done in two Phases. Phase 1 has the following objectives:

- prepare preliminary draft AMSA plans for Cape Thompson and Kasegaluk Lagoon and produce a Report that can be reviewed by Borough residents, state and federal agencies, and private industry
- initiate AMSA planning for the Colville River Delta through the collection of data, identification of data gaps, formation of a coordination group, and identification of Issues, Goals, and Objectives
- involve affected Borough residents, state and federal agencies, and private industry in development of the AMSA plans

An AMSA Plan must go through the same approval process as a district coastal management program. This is because an AMSA plan is considered to be a significant amendment to a coastal program, and requires full public review and approval. Phase 2 of the AMSA planning process will result in completion of the AMSA plans, preparation of a Public Hearing Draft, Concept Approval by the North Slope Borough Assembly, and submittal to the State for approval by the Coastal Policy Council. The proposed schedule for preparing these AMSA's is shown in Table 1.

**Table 1: Proposed Project Schedule****Kasegaluk Lagoon, Cape Thompson- Pt. Hope**

<u>Task</u>	<u>Completion Date</u>
Boundary Identification	March 1989
Issue/Conflict Identification	May 1989
Resource Inventory	May 1989
Resource Analysis	June 1989
Preliminary Policies	June 1989
Preliminary Implementation	June 1989
Phase 1 Report	June 1989
Phase 2 Begins	September 1989
Public Hearing Draft	December 1989
Public Hearings	January 1990
Concept Approved Draft	February 1990

**Colville River Delta**

<u>Task</u>	<u>Completion Date</u>
Boundary Identification	March 1989
Issue/Conflict Identification	May 1989
Preliminary Resource Inventory	June 1989
Preliminary Resource Analysis	June 1989
Phase 1 Report	June 1989
Phase 2 Begins	September 1989
Preliminary Policies	November 1989
Preliminary Implementation	November 1989
Public Hearing Draft	December 1989
Public Hearings	January 1990
Concept Approved Draft	February 1990



As a result of the Phase 1 study, several changes are being recommended for the Phase 2 effort. The most significant change is to remove Cape Thomson from further consideration as an AMSA at this time. This is due to the following reasons:

- the area is no longer under consideration as a port site for mineral development; such a facility has been developed further to the south in the Northwest Arctic Borough. there are no other major resource development projects proposed for the area at this time.
- during a public meeting in Point Hope and subsequent discussions with city and corporation representatives, it was pointed out that the areas around Point Hope and Cape Lisburne to the north were equally as important to residents as Cape Thomson in terms of resources and uses.
- major concerns raised had to do with permit and construction project coordination with the North Slope Borough than other state and federal agencies. there are other ways of solving these problems some of which were initiated.

Baseline information was collected for the Point Hope area, and has been included in this report. During village workshops on the AMSA project, Borough staff increased their awareness of community concerns and planning coordination needs, particularly with regard to borough permit review and Capital Improvement Projects. This information obtained on the village of Point Hope will be used to help Borough staff with permit reviews and planning projects in Point Hope.

## **1.4 REPORT ORGANIZATION**

This report on Areas Meriting Special Attention is divided into the following chapters:

- Point Hope - Cape Thomson Planning Area
- Kasegakuk Lagoon AMSA
- Colville River Delta AMSA
- Appendices

# **POINT HOPE PLANNING AREA**

# **POINT HOPE-CAPE THOMSON PLANNING AREA**

## **1.0 INTRODUCTION**

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Cape Thompson was included in the concept approved draft of the CMP as candidates for Areas Meriting Special Attention (AMSA): Cape Thomson (south of Point Hope) and Kasegaluk Lagoon. Cape Thomson was identified due to its value for seabird habitat, cultural resource values, and potential as a port site for the Red Dog and other mining projects.

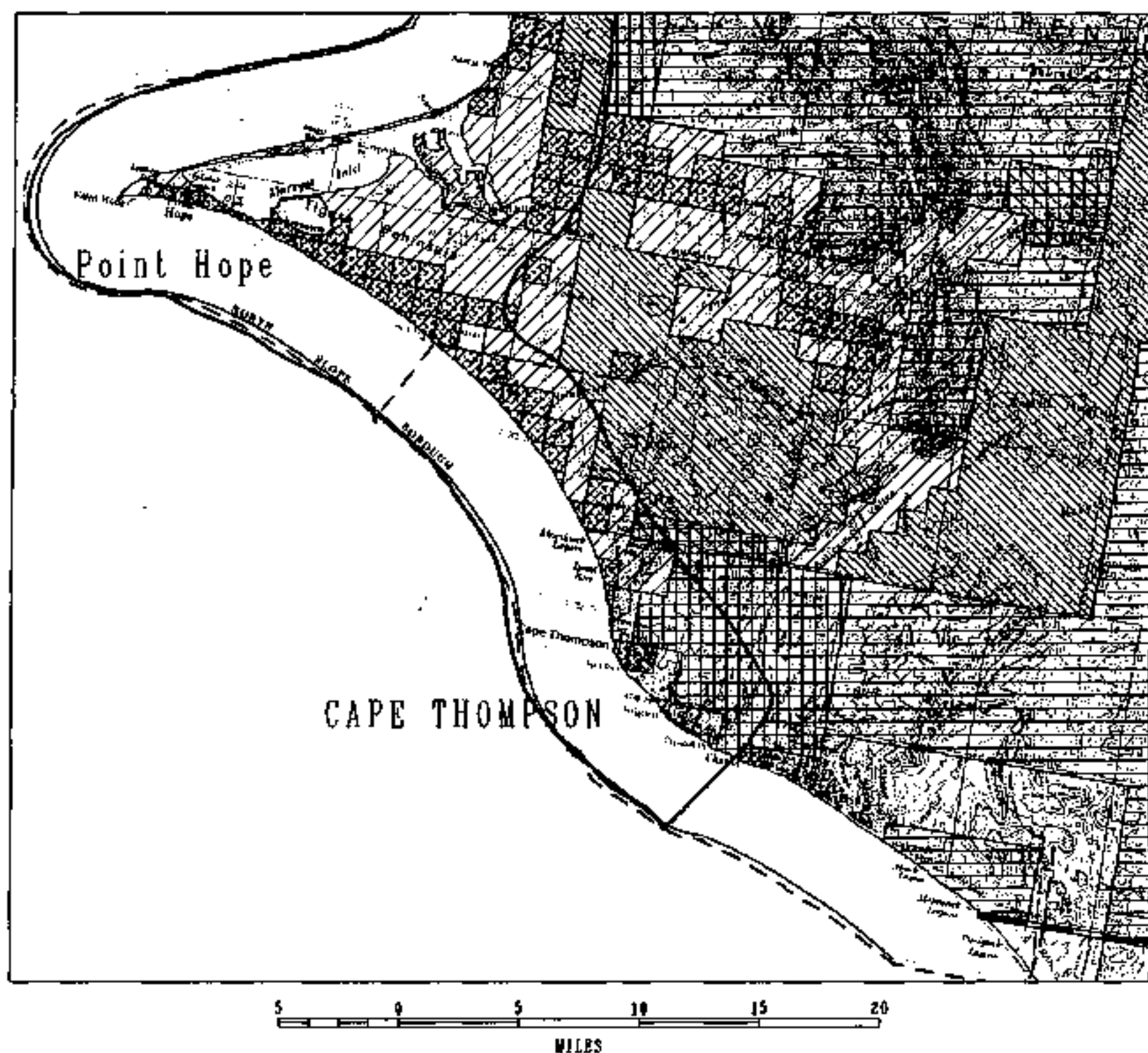
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- during a public meeting in Point Hope and subsequent discussions with city and corporation representatives, it was pointed out that the areas around Point Hope and Cape Lisburne to the north were equally as important to residents as Cape Thomson in terms of resources and uses.
- major concerns raised had to do with permit and construction project coordination with the North Slope Borough than other state and federal agencies. there are other ways of solving these problems some of which were initiated.

Baseline information was collected for the Point Hope area, and has been included in this report. During village workshops on the AMSA project, Borough staff increased their awareness of community concerns and planning coordination needs, particularly with regard to borough permit review and Capital Improvement Projects. This information obtained on the village of Point Hope will be used to help Borough staff with permit reviews and planning projects in Point Hope.

## **2.0 POINT HOPE PLANNING AREA BOUNDARY**

When a public workshop and discussions with individuals were held in Point Hope, people indicated that their area of concern stretched from Cape Lisburne on the north to Cape Thompson on the south. Map 2-1 shows this planning area.



## State Ownership

- Selected Land
- Patented or Tentatively Approved Land

## Regional Corporation Ownership

- Selected Land
- Patented or Interim Conveyed Land

## Village Corporation Ownership

- Selected Land
- Patented or Interim Conveyed Land

## Federal Ownership

- Native Allotments
- Native Allotment Applications

## Boundary

- Three mile seaward boundary is the same as the coastal management boundary. The inland boundary is continuous with the Arctic Marine Wildlife Refuge, Church Bay Unit, Cape Thompson Subunit

# North Slope Borough Coastal Management Program CAPE THOMPSON Candidate AMSA Land Status



Point Hope  
Planning Area Boundary

MAP 2-1

## **3.0 RESOURCE INVENTORY: POINT HOPE PLANNING AREA**

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### **3.1 BIOLOGICAL RESOURCES**

A discussion of some of the biological resources of the Point Hope area is included under Section 3.1 of the Kasegaluk Lagoon AMSA. Maps of biological resources of the Point Hope area are also presented in Section 3.1 of the Kasegaluk Lagoon AMSA.

### **3.2 PHYSICAL ENVIRONMENT**

A discussion of some of the physical environment of the Point Hope area is included under Section 3.1 of the Kasegaluk Lagoon AMSA.

### **3.3 HUMAN RESOURCES**

#### **3.3.1 Community Setting: Point Hope**

The community of Point Hope is located on the western tip of a large spit extending 15 miles out into the Chukchi Sea. The gravel bars which converge to form the spit enclose several large, shallow lagoons, and the Kukpuk River, the largest river in the area, flows into the easternmost of these lagoons. Point Hope is approximately 315 miles southwest of Barrow and 140 miles northwest of Kotzebue.

The history of continual human habitation of Point Hope is perhaps the longest of any village in the North Slope Borough. The physical setting of the village - coastal waters with warm currents and rich in marine life, the lagoons that support waterfowl and fish, and the fish populations of the river systems - have provided a favorable environment for supporting a relatively large population. The Point Hope area has been inhabited for at least 2000 years, with residents utilizing the marine mammal, fish, waterfowl and other subsistence resources. Despite their large historic population, Point Hope was aggressively challenged by adjoining Inupiat communities, and by the time of American/European contact, the population had already begun to decline. This contact brought drastic changes and further accelerated the decline in population, primarily from disease and depletion of marine mammal and caribou stocks. In the late 1880's, a white-managed shore-based whaling station was established on the Point Hope spit, followed by a mission and school. After the whaling industry's collapse by 1910, the Native population declined and scattered. Like other North Slope villages, Point Hope was affected by the development and later decline of the fur and the reindeer herding industries. After World War II, the population slowly

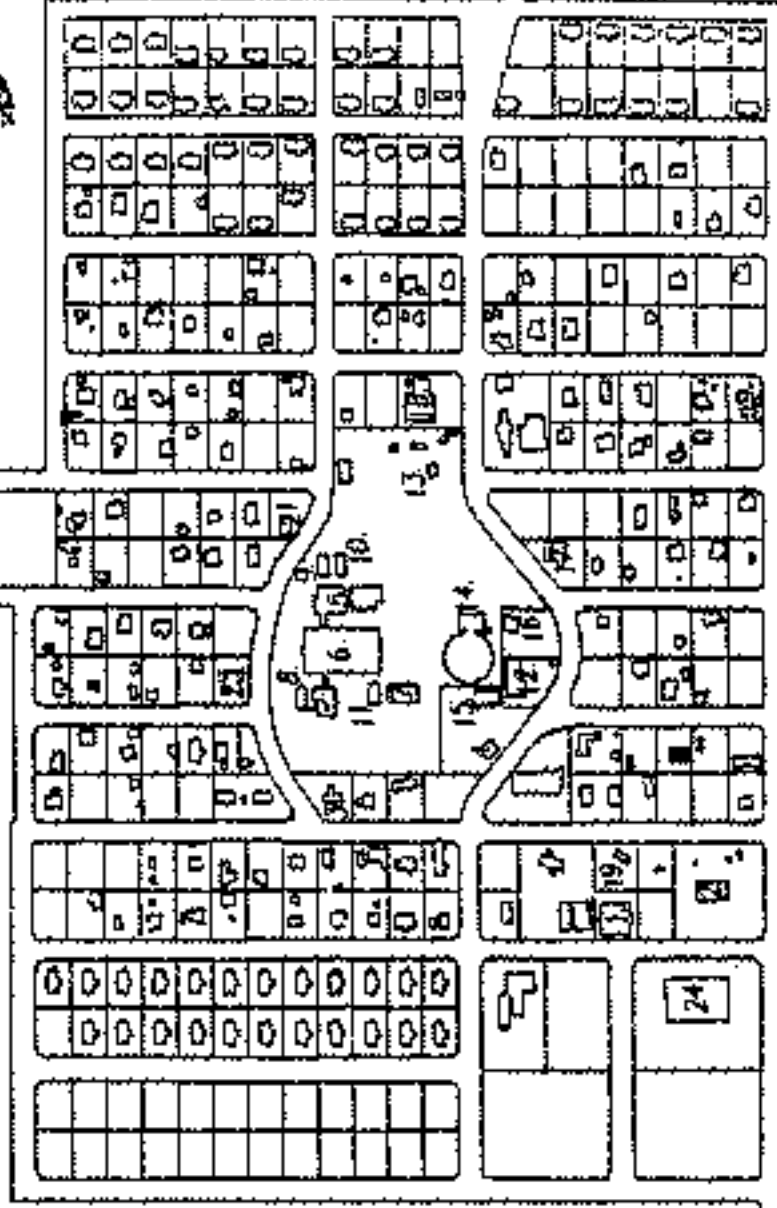
# PT. HOPE, ALASKA



UND.

## USE REAL PROPERTY

1. Four Plex
2. Mobil Equipment Stor.
3. Mobil Equipment Fac.
4. Sr. Citizens Center
5. Sr. Citizens Center Complex
6. Elem. & High Sch. Complex
7. Sch. Gymnasium & Pool
8. Sch. Voc Ed./Shop
9. Sch. Voc Ed./Shop #1
10. Portable Classroom #1
11. Portable Classroom #2
12. Portable Classroom #3
13. Portable Classroom #4
14. Portable Classroom #5
15. Generator Plant
16. Generator Garage
17. School Treatment Fac.
18. Water Pumping Fac.
19. Sewage Pumping Fac.
20. Health Clinic
21. Health Safety Office
22. Public Station
23. Fire Station
24. Central Old Office/CATV Headend Fac.
25. Central Old Office/CATV Headend Fac.
26. Old Generator Plant
27. City Hall
28. Airport Terminal
29. Daycare Center
30. U.S.D.W.



USE REAL PROPERTY  
 1980 Planning Dept.  
 1980 Planning Dept.  
 1980 Planning Dept.

Airport Terminal #22  
 2 Miles West

stabilized and then gradually increased. Point Hope was first incorporated as a first class city in 1966, and later incorporated as a second class city in 1972. Like Point Lay, the site of the village has also been re-established. The old site on the north side of the spit was increasingly subject to erosion and coastal flooding during storms. The current site was chosen because of higher ground and its location on the south side of the spit; relocation took place during 1978 and 1979. Figure 3-1 presents the layout of Point Hope.

### **3.3.2 Population and Employment Characteristics**

The North Slope Borough completed a population census of Borough villages in the spring of 1989. Table 3-1 presents 1988 population characteristics for the village of Point Hope, which is the second largest village in the Borough after Barrow. The 1988 population was 591, 88.3% of whom were Inupiat. Males outnumbered females, 53.6% to 46.4%. The population was relatively young, with an average age of 23.8 and 58.6% of the population 25 or younger. Between 1980 and 1988, the population increased 29.1% from 480 to 561.

There were 144 households in Point Hope in 1988; average household size was 4.1 persons. The median and average household incomes were \$32,500 and \$36,705.

Tables 3-3 and 3-4 show occupation and industry composition of employment in Point Hope. Total employment in the village nearly doubled, from 124 to 213 between 1980 and 1988. An increase in employment by the North Slope Borough government accounts for much of the total increase in employment. In 1988, the Borough accounted for 67.3% of employment within the community, including school district employment. Native corporations and their affiliates accounted for 12% of total employment, or roughly half of private sector employment. During this period unemployment has fallen from 42% to 8.6%. However, underemployment - persons that worked part of the year but would have worked more if jobs had been available - is still relatively high at 28% of the workforce.

North Slope Borough projections for future growth in population and employment make the following assumptions:

- recent historic annual growth rates of village population (slightly over 2%) would continue into the future
- village labor force changes would follow natural shifts in the age distribution of village population
- unemployment will stay at 5% of the labor force
- the ratio of North Slope Borough government to total village employment will stay the same



TABLE 3-1

AGE, SEX, AND RACE COMPOSITION OF POPULATION  
POINT HOPE

	INDIAN			NON-INDIAN			TOTAL			% TOTAL
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	
UNDER 4	31	27	58	3	3	6	34	30	64	11.6%
4 - 8	46	31	77	8	4	12	55	35	90	16.2%
9 - 15	37	40	77	6	3	9	43	43	86	15.6%
16 - 17	6	6	12	0	2	2	6	10	16	2.9%
18 - 25	35	25	60	1	2	3	36	27	63	11.4%
26 - 39	56	54	110	9	7	16	64	61	125	22.8%
40 - 59	37	29	66	10	5	15	47	34	81	14.6%
60 - 65	5	5	10	1	0	1	6	5	11	2.0%
66 +	6	12	18	0	0	0	6	12	18	3.2%
TOTAL	258	231	489	30	26	56	297	257	554	100.0%
%	46.5%	41.7%	44.3%	7.0%	4.7%	11.7%	53.6%	48.4%	55.7%	
NUMBER OF MISSING OBSERVATIONS										37
TOTAL POPULATION										591

AVERAGE AGE  
(years)

ENTIRE POPULATION	23.8
MALE	23.2
FEMALE	24.6
INDIAN	23.8
NON-INDIAN	24.2

Source: NSB Census of Population and Economy, 1969.

TABLE 3-2  
OCCUPATION COMPOSITION OF EMPLOYMENT  
POINT HOPE

OCCUPATION GROUPS	NON- INDIAN		TOTAL	% TOTAL
	INDIAN	NON-INDIAN		
EXEC. ADMIN. MGR.	17	7	24	11.3%
PROFESSIONAL	0	0	0	0.0%
TEACHER	2	13	15	7.1%
TEACHER AIDE	10	0	10	4.8%
TECHNICIAN	5	0	5	2.4%
ADMIN. SUPPORT	15	1	16	7.6%
SERVICE	32	3	35	16.5%
OPERATOR/MECHANIC	20	1	21	9.9%
PILOT	0	0	0	0.0%
LABORER	15	1	17	8.0%
CRAFTSMAN	15	1	16	7.6%
ARTISAN	3	0	3	1.4%
ARMED FORCES	1	0	1	0.5%
TRAPPER/HUNTER	0	0	0	0.0%
OTHER	30	4	34	16.3%
TOTAL EMPLOYED	181	31	212	100.0%
% OF TOTAL	85.4%	14.6%	100.0%	
LABOR FORCE	201	31	232	
% OF TOTAL	86.6%	13.4%	100.0%	
TOTAL UNEMPLOYED	20	0	20	
UNEMPLOYMENT RATE	10.8%	0.0%	8.6%	
TOTAL UNDER-EMPLOYED	60	4	64	
UNDER-EMPLOYMENT RATE	28.9%	12.9%	27.6%	

## Notes:

- (1) Total employed includes part-time, temporary, as well as full-time employment.
- (2) The occupation category "OTHER" includes underemployed persons otherwise not accounted for. Underemployment refers to persons that were unemployed because they could not find a job during part of the year.
- (3) Unemployed refers to persons out of work because they could not find a job for the entire twelve-month period.
- (4) Labor force = employed + underemployed + unemployed.
- (5) Unemployment rate = persons unemployed divided by the labor force.

Source: NSB Census of Population and Economy, 1960.

**TABLE 3-3**  
**INDUSTRY COMPOSITION OF EMPLOYMENT**  
**POINT HOPE**

INDUSTRY GROUP	NON-		TOTAL	% TOTAL
	INDIAN	INDIAN		
PRIVATE SECTOR				
FISHERIES	0	0	0	
MINING	3	0	3	
CONSTRUCTION	5	1	6	
TRANSPORTATION/PUBLIC UTIL	1	0	1	
TRADE	6	0	6	
FINANCE/INSURANCE/REAL EST	0	0	0	
BUSINESS/REPAIR SERV	1	0	1	
ENTERTAINMENT/TOURIST SERV	0	0	0	
HEALTH, SOCIAL, & EDUC SERV	2	0	2	
SELF-EMPLOYED	0	0	0	
NATIVE CORP & AFFILIATE	20	1	21	
OTHER	2	1	3	
SUBTOTAL	40	3	43	25.1%
NSB GOVERNMENT				
HEALTH	17	0	17	
PUBLIC SAFETY	0	1	1	
MUNICIPAL SERV	20	3	23	
FIRE DEPT	0	0	0	
SEARCH & RESCUE	0	0	0	
HOUSING	4	0	4	
WILDLIFE MGT	0	0	0	
RELT & MAP	16	2	18	
LAW OFFICE	0	0	0	
ADMIN & FINANCE	0	0	0	
PLANNING	0	0	0	
INDUSTRIAL DEVELOPMENT	0	0	0	
HIGHER EDUCATION CENTER	1	0	1	
MAYOR'S OFFICE & ASSEMBLY	2	0	2	
OTHER NSB	1	0	1	
SUBTOTAL	61	6	67	39.2%
NSB SCHOOL DISTRICT	31	17	48	28.1%
NSB SUBTOTAL	92	23	115	67.3%
OTHER LOCAL GOVT	9	1	10	5.8%
STATE GOVT	1	0	1	0.6%
FEDERAL GOVT	1	0	1	0.6%
ARMED FORCES	1	0	1	0.6%
SUBTOTAL ALL GOVT	104	24	128	74.9%
GRAND TOTAL	144	27	171	100.0%
% OF TOTAL	84.2%	15.8%	100.0%	

**Notes:**

(1) Figures equal to number of persons employed, including part-time, temporary, and full-time employment.

Source: NSB Census of Population and Economy, 1989.

These assumptions would result in a projected 1994 population of Point Hope of 658, and total employment of 275.

### **3.3.3 Community Facilities**

Community facilities are shown on Figure 3-1.

#### **Utilities**

The North Slope Borough's Department of Public utilities is responsible for the operation of the major utilities, which include an electric power generation and distribution system, water services, sewage collection services, and solid waste disposal services.

#### **Schools and Public Buildings**

Point Hope has a school complex that includes a Early Childhood Education Program and grades K through 12. In addition to classrooms and offices, the complex has a multi-purpose/gymnasium facility, a swimming pool, teacher housing and shop areas. Other major public buildings in Point Hope include a City Office-community meeting complex, the Community Building, a Senior citizens Center, a National Guard Armory, the Public Safety Building, the Fire Station, the Health Clinic, and the Heavy Equipment Storage Building.

#### **Transportation**

Point Hope's airport is owned by the State of Alaska and maintained by the North Slope Borough. The gravel airstrip is 100 feet wide by 4,000 feet long. Commercial air carriers and the residents of Point Lay. Commercial service is provided several times a week by Cape Smythe Air Service from Barrow and Baker Aviation out of Kotzebue.

The road system within the townsite is the other formal major transportation system in Point Hope. It is maintained by the North Slope Borough Public Works Department. The City of Point Hope operates a small shuttle bus that provides service around town and to the airport.

Boats, ATV's and snow machines are used for transportation throughout the planning area. Boats are used during the open water period for subsistence activities and travel to hunting and fishing camps. Three and four wheelers are used on the barrier islands and on riverbanks during the summer months. Snowmachines are the most important means of transportation during the winter, both out on the sea ice and for travelling inland.

### **3.3.3 Land Use and Ownership**

Within the Point Hope/Cape Thompson planning area, categories of land use include subsistence and other traditional uses; resource development, such as gravel extraction, and potentially exploration for oil and gas; and uses associated with the village of Point Hope, including residential, commercial, public utilities and services, and transportation uses.

**Subsistence and Traditional Uses.** Subsistence and other traditional land uses occur throughout the AMSA; they include fixed sites, such as fishing and hunting camps; areas of traditional use, such as fish streams or marine waters off Point Hope; or often move in response to the location of the resource being harvested. Maps 1 through 6 provide information of subsistence use areas. These uses and areas used are described in more detail in Section 3.3.5. Traditional Land Use Sites identified by the North Slope Borough are shown in Table 3-5.

**Resource Development.** Existing resource development uses are currently limited within the planning area to sand and gravel extraction for capital project construction by the Borough. The spit itself is rich in rounded, well-sorted beach gravel. However, fine-grained sands and more angular gravel better suited to project construction, particularly roads, are scarce and must be obtained near the base of the spit.

With the development of the Red Dog Mine road and port system, future mineral development is likely to use those facilities rather than develop a new port at Cape Thompson. There is a possibility that exploration for oil and gas resources in the Chukchi Sea could eventually result in some development in the vicinity of Point Hope. At this time, exploration efforts are focusing on tracts northwest of Point Lay, and industry is aware of local interest in keeping development away from the villages. A Hope Basin OCS Lease Sale has been identified as part of the five year schedule and is scheduled for 1992, and includes waters off of Point Hope. However, oil and gas related exploration and development in the planning area does not appear likely in the short term.

**Village Townsite Land Use.** These uses include residential, commercial, and public utilities and community services, most of which take place within the boundaries of the village townsite. The last detailed study of land use in Point Hope was conducted in 1983; at that time nearly 45 % of the 240 developed acres of the townsite are in the airport tract. Of the remaining 133 acres, 32 % was occupied by residential use, 23 % was taken up by public roads, utilities and storage facilities accounted for another 24 %, public facilities occupied 6 %, and 2 % was in commercial use. Vacant land accounted for 18.5 acres. The current distribution of land use is similar, with some increase likely in residential, public facility and utility uses resulting from Borough CIP projects.

**Table 3-5**

**TRADITIONAL LAND USE SITES: CAPE THOMPSON AMSA**

<b>SITE</b>	<b>FEATURES</b>	<b>COMMENTS</b>
PH192, Pinutaiq, F-10	Summer camping area, graves, Ruins of fall-winter settlement.	
PH193, Nalaqatsiq, F-11, Nalakachak Creek	Creek.	Creek is a travel route to Ilyirak Creek.
PH194, Kuunuk, F-12	Ruins of fall-winter settlement.	Summer camping area.
Kuunnum kuugauzana, F-13	Creek.	Caribou hunting area.
PH195, Lapland Hills	Ruins.	Former residence of Lapland reindeer herders.
PH196, Arvimaq, F-14	Mountain.	Shape of mountain resembles a whale.
Kuunnum tasia, F-15	Kamegrak Lagoon.	Whitefish fishing area. TLUI and USGS map locations conflict with Akoviknak Lagoon (F-18).
Anayukak, F-16	Hill.	
PH199, Anayukam kuugauzana, F-17	Angayukak Creek; ruins of fall-winter settlement.	Summer camping area. Caribou hunting area. Travel route to Ogotoruk Creek and Koklrak Creek.
PH200, Anayukam tusia, F-18	Akoviknak Lagoon.	Whitefish fishing area.
PH220, Anaaraq, F-22 XPH004?	Ruins of fall-winter settlement.	
PH221, Isuk, F-19	Ruins of fall-winter settlement.	Net fishing area.

**Table 6-1 Cont.**

<b>SITE</b>	<b>FEATURES</b>	<b>COMMENTS</b>
Isum tasia, F-21	Lagoon.	Whitefish fishing area. Incorrectly located at F-18, according to Burch (1981:72).
Anaarum kuugauzana, F-23	Agarak Creek.	Travel route into the hills.
PH222, Immaqpat, F-25	Cliffs.	Sea-cliff bird rookery for gathering eggs.
PH223, Uluzat, F-24	Cliffs.	Sea-cliff bird rookery for gathering eggs. Slate mining area.
PH224, Ivzuligauzaq, F-26	Cliffs.	Sea-cliff bird rookery for gathering eggs; creek there provides access to the rookery.
Igizaqtusuk, F-27, Agate Rock	Cliffs.	Sea-cliff bird rookery for gathering eggs.
PH225, Igizaqtusum kuugauzana	Cliffs, graves.	Sea-cliff bird rookery for gathering eggs; creek there provides access to the rookery. Camping area for caribou hunters.
PH226, Alagagzuit, F-29	Mountain peaks.	Landmark, caribou hunting area.
Immigzuaq, F-30	Imikrak Creek.	Provides access to the cliffs.
Nasauzak, F-31	Cliffs.	Sea-cliff bird rookery for gathering eggs.
Nasauzam kuugauzana, F-32	Nasarak Creek.	Provides access to the cliffs, and the hills inland.

**Table 6-1 Cont.**

<b>SITE</b>	<b>FEATURES</b>	<b>COMMENTS</b>
PH227, Qairusuk, F-33	Cave, cliffs.	Sea-cliff bird rookery for gathering eggs. Site of historic battle between Wales people and Pt. Hope people.
PH228, Amaqtusum kuugauzana, F-34	Amaktusak Creek.	Provides access to the cliffs.
Amaqtusuk, F-35, Crowbill Point	Cliffs.	Sea-cliff bird rookery for gathering eggs.
PH229, Aarutauzaq, F-36	Ruins of fall-winter settlement, grave.	Summer camping area.
Aarutauzam kuugauzana, F-37	Ogotoruk Creek.	Caribou hunting area; travel route to Kukpak River
PH230, Cape Thompson	Arctic Research Laboratory facilities.	Formerly one of the structures used by Pt. Hope people as a stopover place. Ruins are across the creek, according to TLUI.
PH231, Iluitsuq, F-40	Hill, grave.	
PH232, Talavizut, F-41	Talavirak Hills.	Caribou hunting area.
Kurupak, F-42	Kurupak Creek	May be ruins of fall-winter settlement at the mouth, also known as Talavizum kuugauzana.
PH223, Inuktat, F-43	Ruins of fall-winter settlement.	Site of battle between Pt. Hope people and Noatak people about 1800 A.D.



**Table 6-1 Cont.**

<b>SITE</b>	<b>FEATURES</b>	<b>COMMENTS</b>
Inukktam Kuugauzana, F-44	Kiktoya Creek.	Caribou hunting area. "Inuktak Creek" on the USGS maps is incorrect according to Burch (1981:73).
PH234, Kisimiluaq, F- 45	Mountain.	Boundary marker between Ft. Hope and Kivalline regions.

**Ownership.** Land ownership status in the planning area is shown in Map 2-1. In the Planning Area Boundary. In the vicinity of the village Point Hope and along the spit, the majority of surface lands are owned by Tigara Corporation, and several Native allotments are located along the south side of the spit. The State of Alaska owns the airport site, and the old village site is classified as a federal National Historic Landmark. To the south towards Cape Thompson and north at Cape Lisburne, land is a combination of federal ownership (Alaska National Maritime Wildlife Refuge and Department of Defense) and Native ownership (Tigara Corporation and Arctic Slope Regional Corporation).

**Land Management.** Land within the Point Hope/Cape Thompson planning area is subject to several land use plans and controls. The entire planning area lies within the North Slope Borough Coastal Management Program boundaries. Certain types activities that need federal, state, and Borough permits and approvals are required to be consistent with the policies of the Borough's coastal management program. Consistency with the coastal management program is determined through a formal permit review process.

Activities on Borough, state, and private land are subject to the North Slope Borough's Land Management Regulations (LMR's), under Title 19 of the Borough Code. The LMR's establish zoning districts for the Borough, and depending on the nature of the zone and particular activity involved, require permits and compliance with LMR policies.

The State of Alaska's Northwest Area Plan, prepared by the Department of Natural Resources (with input from the Borough, other state agencies, and Native corporations) provides guidelines for uses of and activities on state lands within the AMSA. This includes activities which require a state permit or approval, and actions initiated by the state itself, such as land and other resource disposals or reclassification of state lands.

Federal lands in the vicinity of Cape Thompson and the Cape Lisburne come under the jurisdiction of the Alaska Marine National Wildlife Refuge's Comprehensive Conservation Plan. These include the Cape Lisburne-Anni Stevens Unit and the Cape Thompson Unit. The preferred management alternative for the area would maintain the current use and management conditions: maintain the existing mix of undeveloped habitat and commercial and developed military use sites; protect seabird colonies and marine mammal haulout areas; protect existing fish and wildlife populations and habitats; provide for continued subsistence use of refuge resources and maintenance of traditional access opportunities; and recommend no additional areas for wilderness designation.

Both the Arctic Slope Regional Corporation and Tigara Corporation, the ANCSA village corporation for Point Hope, have guidelines and permit requirements pertaining to use of their lands.

### **3.3.5 Subsistence Activities**

Subsistence is the customary and traditional use of natural resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handicraft articles; and for barter or sharing among subsistence users. For residents of much of rural Alaska, including the study area, subsistence is the predominant way of life, and a continuation of a traditional way of life. It defines personal identity, how people relate to each other, and how they relate to the surrounding environment. Because wage employment and sources of cash in rural communities are limited, and processed food is available but expensive, subsistence is a major component of the economy, putting food on the table and providing fuel, building material, and clothing. Subsistence harvests provide the bulk of the Inupiat Eskimo diet.

**Subsistence Resources.** Table 3-5 presents a list of subsistence resources used by residents of Point Hope. The residents of Point Hope participate in the pursuit of a diverse number of terrestrial and marine subsistence resources. Marine mammal resources, particularly seal and bowhead whales, have been harvested for over two thousand years in the general area of the current village.

**Harvest Patterns.** The seasonal round of subsistence activities is shown in Figure 3-2. In general, the pattern and timing of the harvest relates to the seasonal distribution and abundance of resources in the area.

**Subsistence Use Areas.** The area used by Point Hope residents in pursuit of subsistence activities falls within the low range of subsistence harvest areas for North Slope Borough communities. Recent studies by the Alaska Department of Fish and Game (ADF&G 1985) estimate that the minimum community use area covers roughly 3,500 square miles. Subsistence use areas are shown on Maps 1 through 6.

**Harvest Methods and Access to Resources.** Hunting for bowhead whales is a community-wide activity, unlike other subsistence activities. Whaling crews are formed to hunt for whales, using small boats with paddles and outboard motors, and a shoulder fired harpoon gun. For spring whaling, snow machines are used to establish and bring supplies to whaling camps on the ice at the edge of leads. Considerable preparation is required for the hunt, and depending on conditions and the success of the hunt, hunting can require several weeks. Once a whale has been caught, much of the village helps with the task of butchering, and whale meat is distributed throughout the village using traditional patterns of sharing.

Other marine mammals, caribou, and some furbearers are hunted with rifles; shotguns are used for other furbearers and waterfowl. Fishing in the waters of the lagoon is done with

Table 3-5 SPECIES HARVESTED, BY RESOURCE CATEGORY

Resource Category	Species
Caribou	Caribou
Vegetation	Blueberry Cloudberry (grass roots) (sourdock) wild Celery wild Potato Willow leaves Hudson's Bay Tea
Furbearers	Arctic Fox Red Fox Wolf Wolverine
Whale	Belukha Bowhead
Invertebrates	Clams (unidentified) Tanner Crab Shrimp (unidentified)
Wildfowl	Pacific Black Brant Canada Goose White-fronted Goose Snow Goose Common Eider King Eider Spectacled Eider Steller's Eider Oldsquaw Pintail Snowy Owl Willow Ptarmigan Bird's eggs
Brown bear	Brown bear
Fuel and Structural Material	Coal Driftwood Willows
Small Mammals	Arctic Ground Squirrel Arctic Marmot
Walrus	Walrus
Seals	Bearded Seal

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**Resource Category**

---

**Species**

---

Ringed Seal  
Spotted/Harbor Seal

Polar Bear

Polar Bear

Fish

Arctic Char  
Arctic Cisco  
Arctic Flounder  
Arctic Grayling  
Bering Cisco ?  
Chum Salmon  
Capelin/Smelt ?  
Pacific Herring  
Pink Salmon

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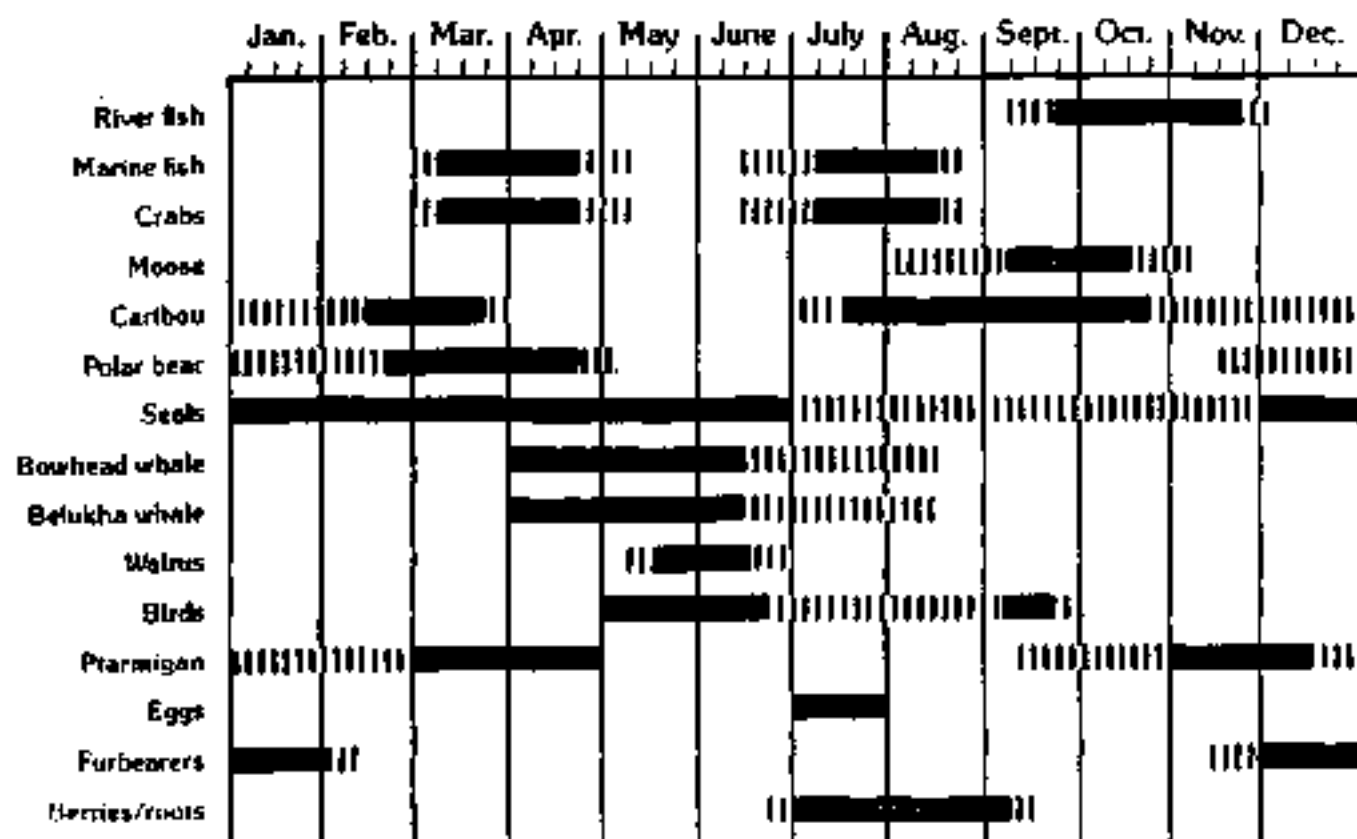
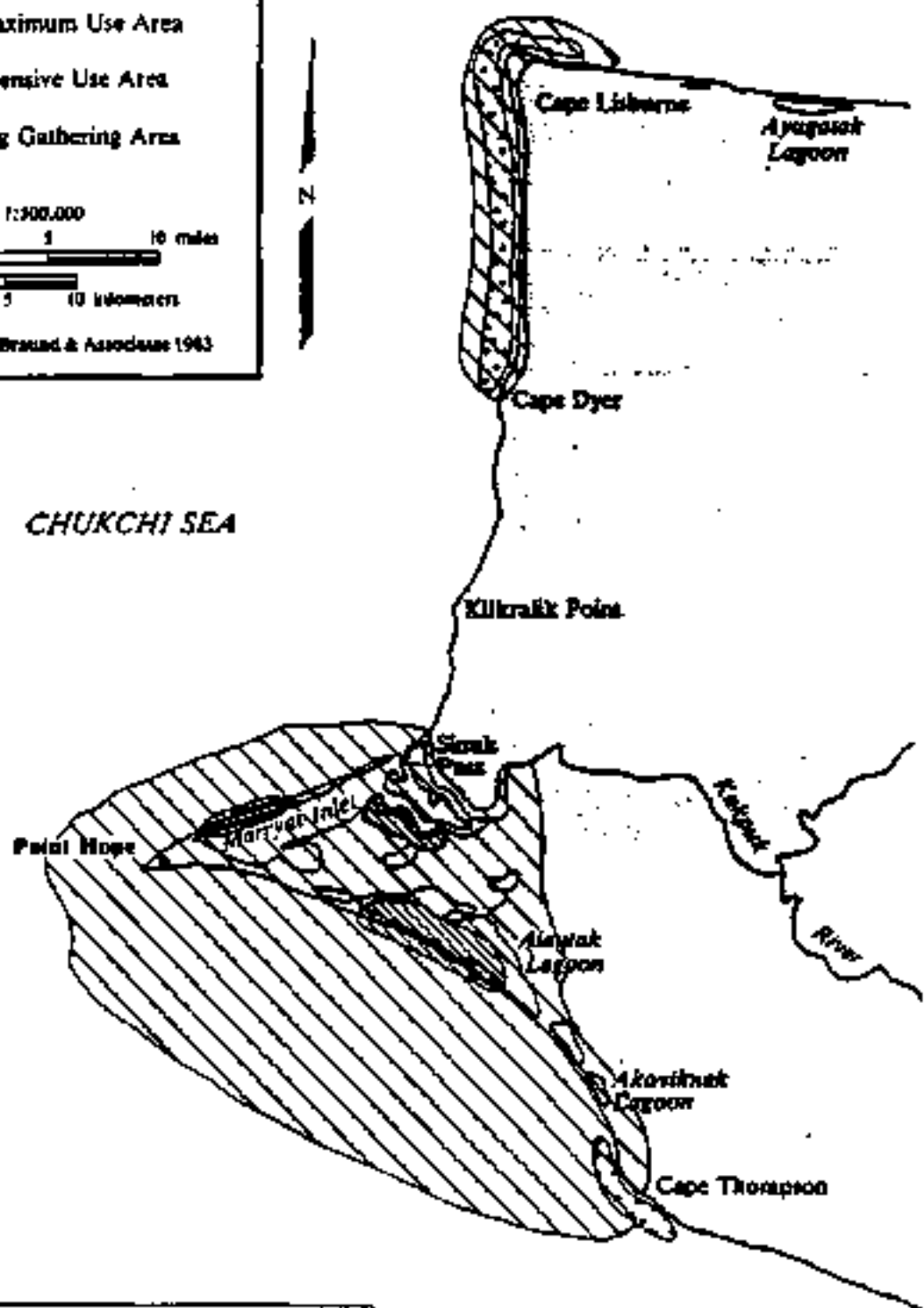
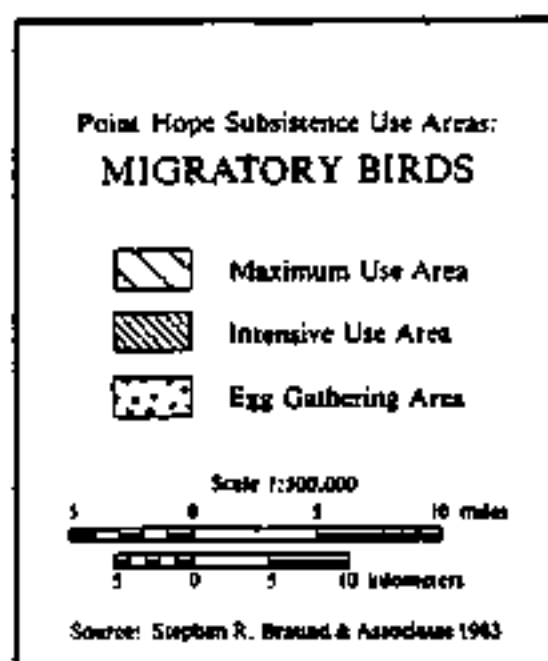
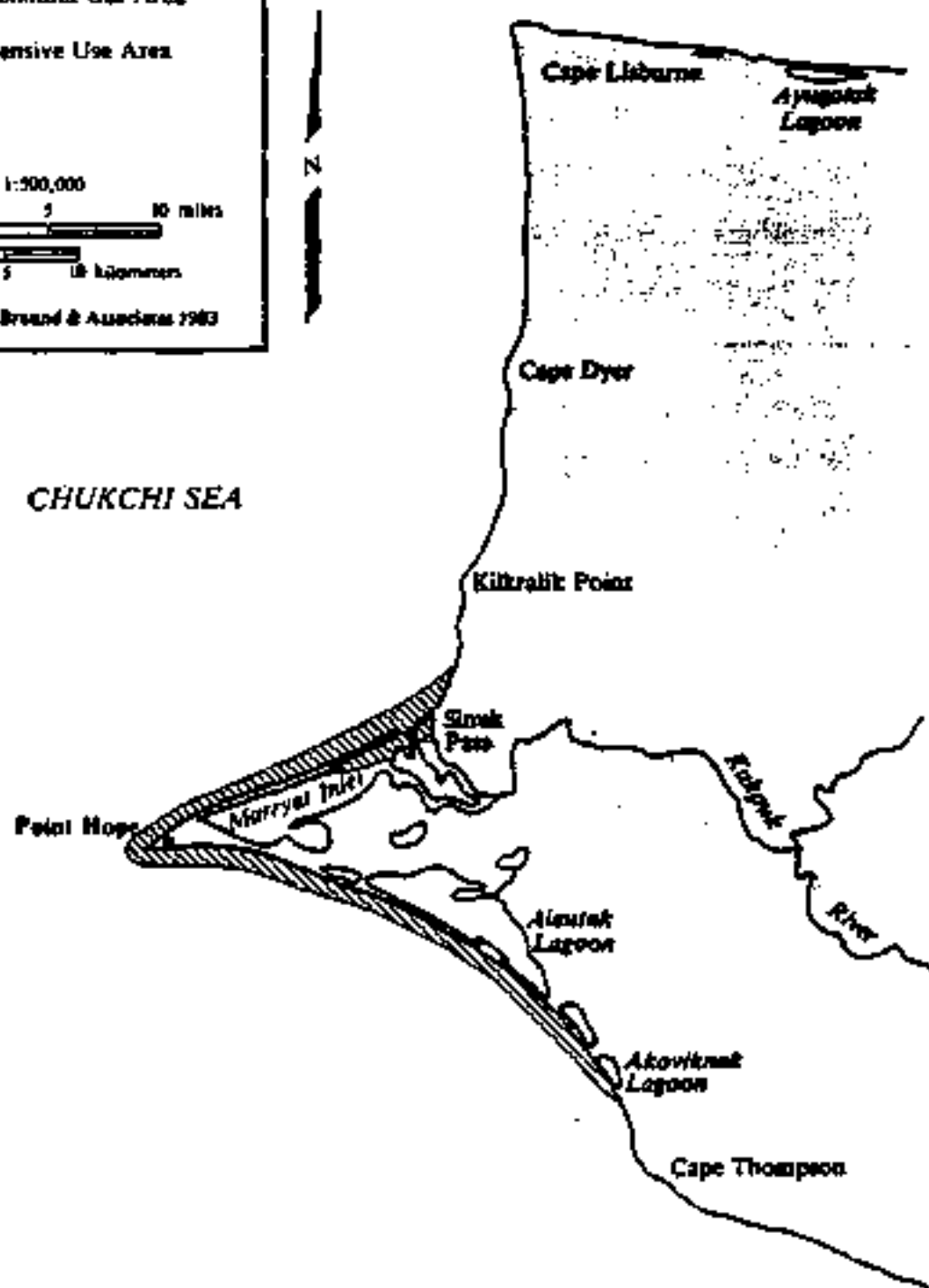
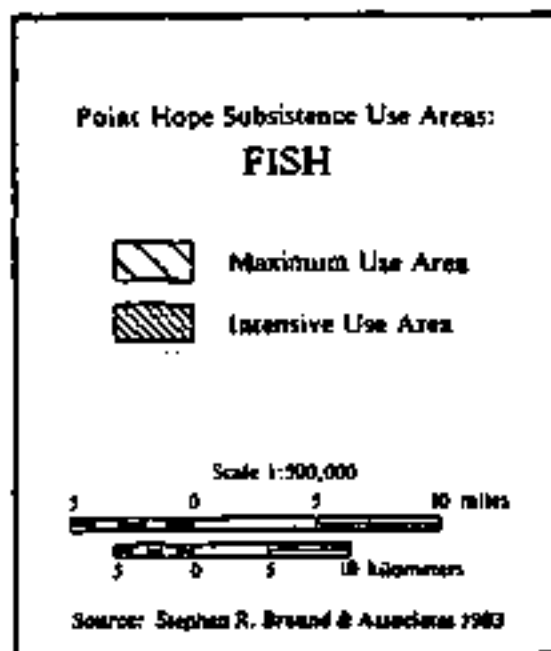


Figure 3-2. Annual round of harvest activities by Point Hope residents, ca. 1980's. Solid line indicates time when harvest usually takes place. Broken line indicates occasional harvest effort (Pedersen 1977).

Figure 3-2

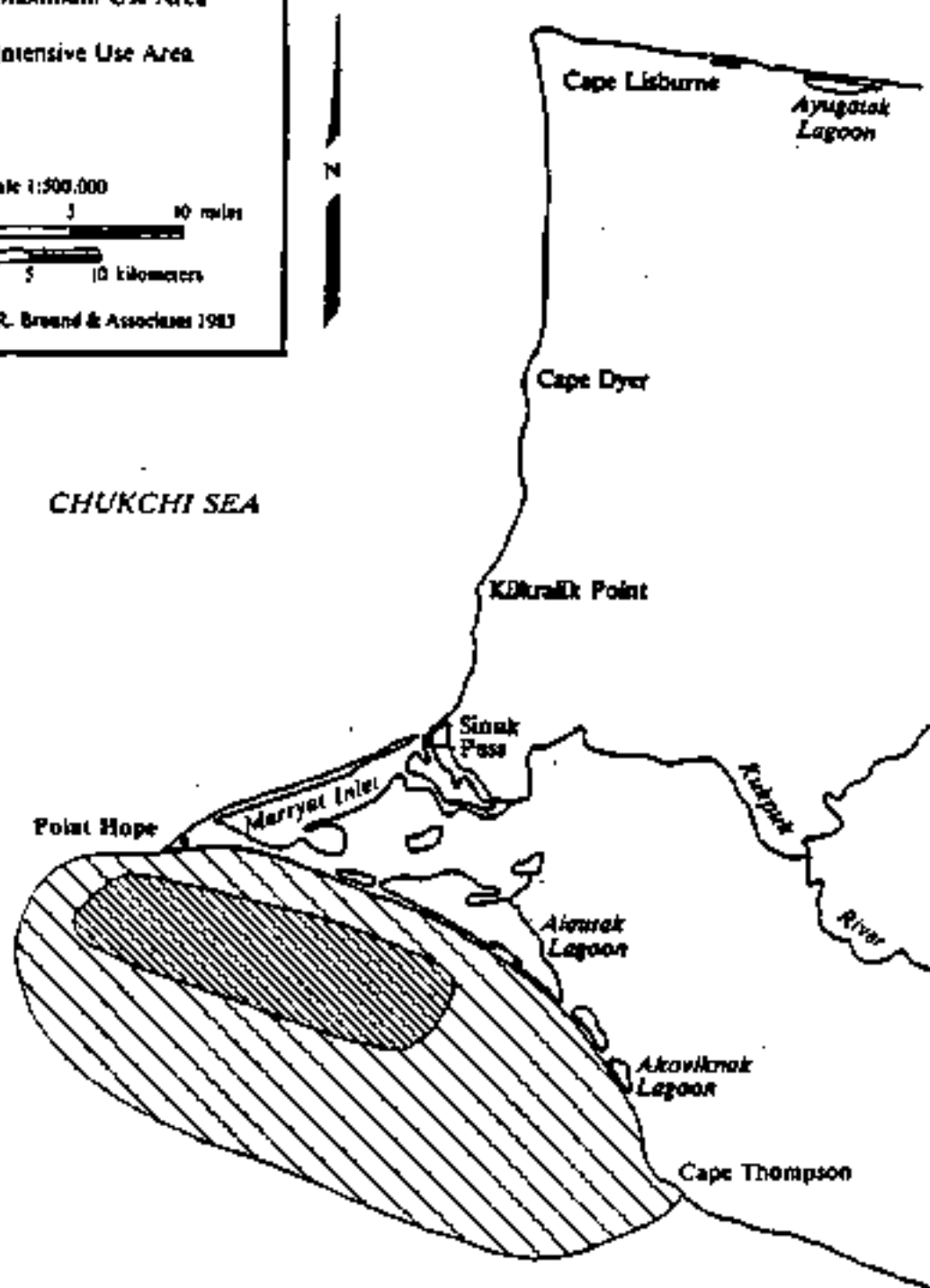
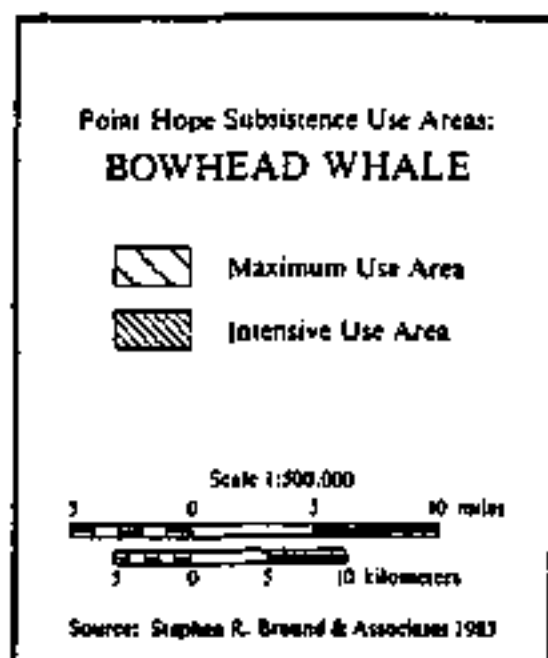


Map 1 - Point Hope Subsistence Use Areas

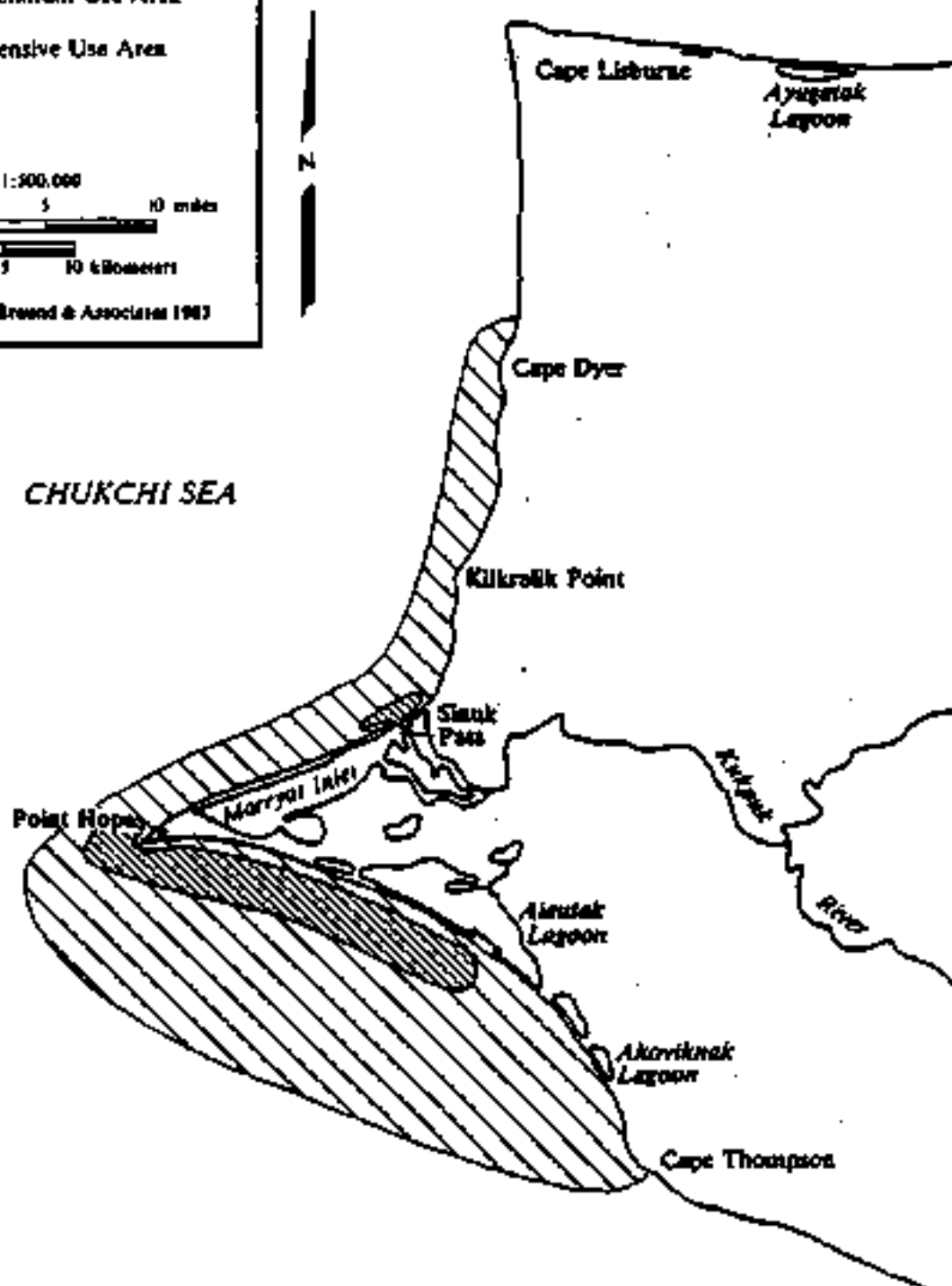
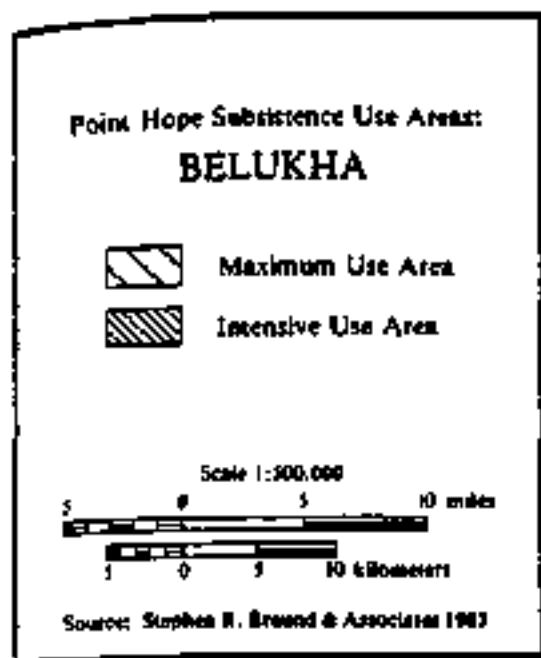


Map 2 - Point Hope Subsistence Use Areas





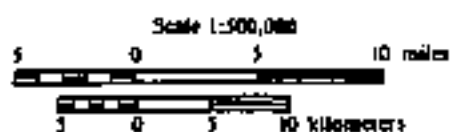
Map 3 - Point Hope Subsistence Use Areas



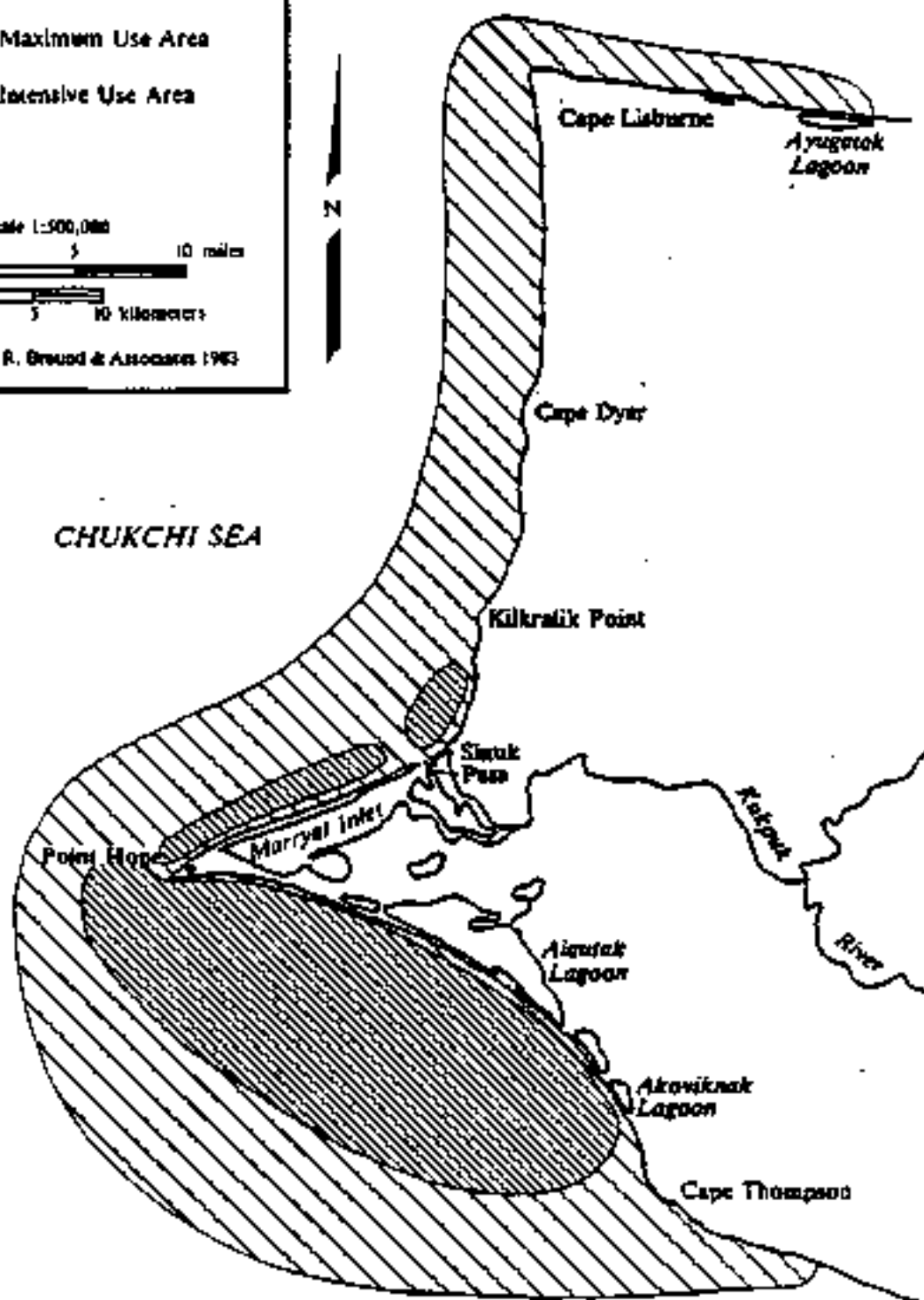
Map 4 - Point Hope Subsistence Use Areas

Point Hope Subsistence Use Areas:  
**SEAL/UGRUK**

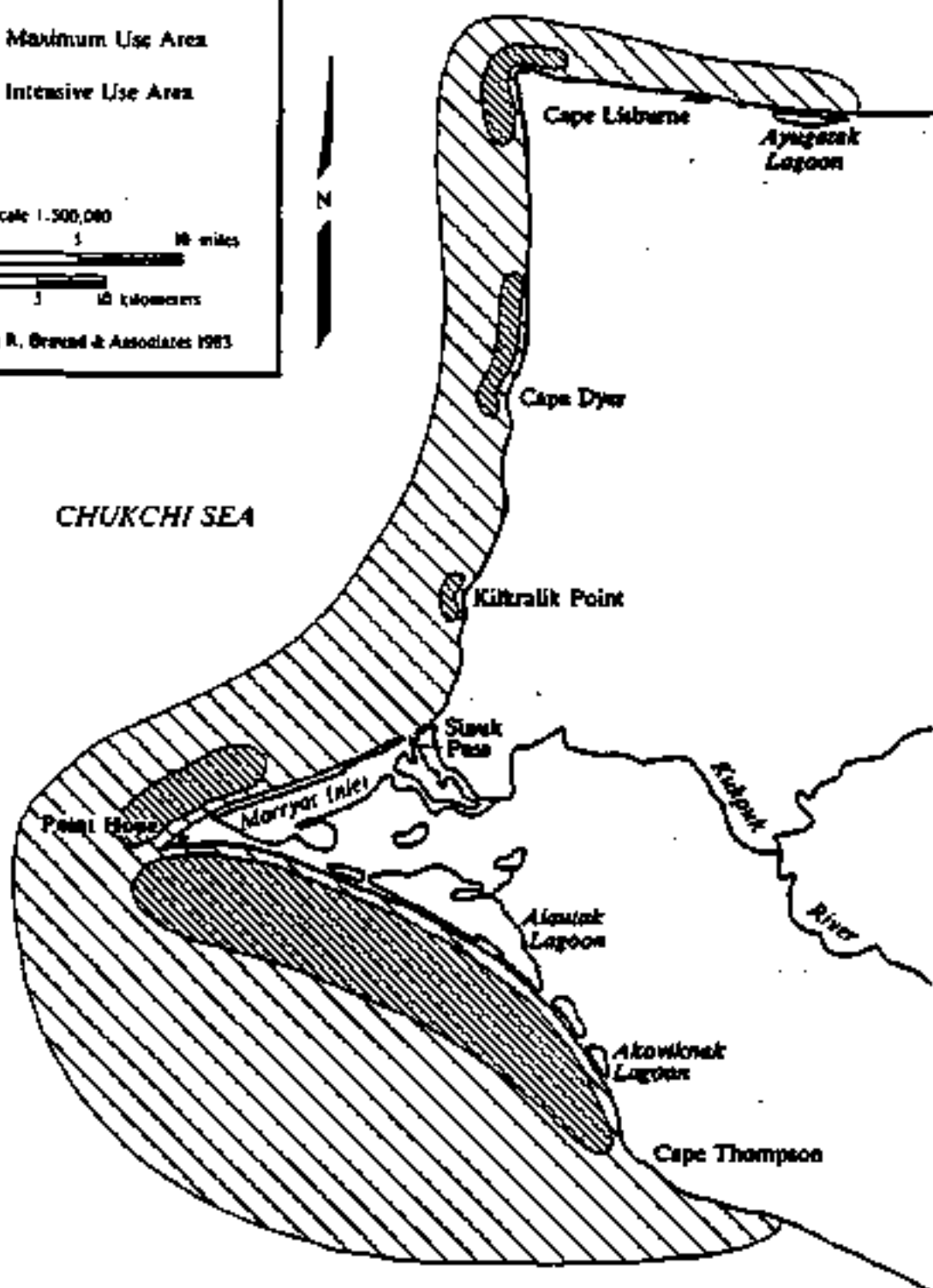
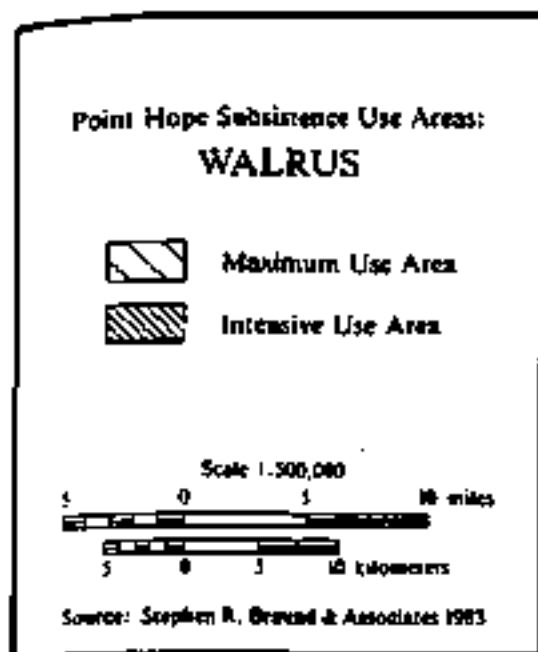
-  Maximum Use Area
-  Intensive Use Area



Source: Stephen R. Grunard & Associates 1983



Map 5 - Point Hope Subsistence Use Areas



Map 6 • Point Hope Subsistence Use Areas

gillnets set out along the shore of the barrier islands. During the fall fishing occurs upriver, using rod and reel, and nets under the ice.

Access to subsistence resources and use areas depends on the season. During the open water months, small boats with outboard motors are used extensively throughout Kasegaluk Lagoon, for fishing, marine mammal hunting, and access to some waterfowl and caribou hunting areas. Boats are also used to get to fish camps up the rivers within the AMSA. Three and four wheelers are used on the barrier islands and on riverbanks during the summer months. Snowmachines are the most important means of access during the winter, both out on the sea ice and for travelling inland.

#### Harvest and Distribution

Estimates and actual harvest data from 1962 through 1982 indicates that caribou rank first in terms of the percentage weight of average annual subsistence harvest at 29.5 % (Alaska Consultants and Stephen Braund Associates, 1984). Bowhead whale are ranked second at 22.3%, followed by hair seal at 14.8%, and fish at 10.1 %. This information confirms the importance of a successful bowhead whale hunt, and the reliance on marine subsistence resources. The average annual per capita harvest over this period was estimated at 413 kilograms (187 pounds).

#### **3.3.6 Political and Institutional Structure**

There are several institutions that play an important role in making decisions that affect the village of Point Hope. These include the City of Point Hope, the Tigara Corporation, a IRA tribal government, and representatives of a regional IRA organization, Inupiat Community of the Arctic Slope (ICAS).

The City of Point Hope has a seven member city council and a mayor. The City interacts on a regular basis with the North Slope Borough and state and federal governmental agencies. This includes the permit notification for the Borough's LMR permits, the Coastal Management Consistency Review, and Capital Project Planning.

Tigara Corporation is the for-profit village corporation established by ANCSA. It manages and disposes of surface lands to which it is entitled under ANCSA. The corporation is also involved in several economic venture within and outside of the village of Point Hope. It owns a local store, a local fuel dealership, and a construction company which participates in capital improvement construction projects in the borough.

The IRA village council has become more active in Point Hope affairs in recent years. The council coordinates with both Tigara Corporation and the City of Point Hope on activities of community concern.

**KASEGALUK LAGOON  
AREA MERITING SPECIAL ATTENTION**

# KASEGALUK LAGOON AREA MERITING SPECIAL ATTENTION

## 1.0 INTRODUCTION

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Kasegaluk Lagoon was included in the concept approved draft of the CMP as candidates for Areas Meriting Special Attention (AMSA). The lagoon was nominated as an AMSA candidate for its importance for beluga whale and other marine mammal habitat, and subsistence importance to the residents of Point Lay. In the last few years, two major development projects have been proposed in this general area, primarily in the vicinity of Point Lay and Kasegaluk Lagoon: development of coal deposits on ASRC lands, and offshore development associated with the federal OCS sale in the Chukchi Sea. The following information on the Basis for AMSA candidacy has been summarized from the federally approved version of the North Slope Borough Coastal Management Program:

### 1.1 AMSA PRIMARY VALUE AND BASIS FOR CANDIDACY

#### 1. AMSA Primary Value And Basis For Candidacy

a. Primary Values: Habitat for marine mammals, waterbirds, caribou, and marine and freshwater fish; subsistence activities, including harvest of fish and wildlife resources, location of subsistence hunting and fishing camps, and access to resources and camps; coal deposits and potential offshore deposits of oil and gas; and research activities.

The waters of Kasegaluk Lagoon and the nearshore waters seaward of the barrier islands represent a high-use area for beluga whales and other marine mammals. Belugas use the nearshore waters seaward of the barrier islands extensively throughout the summer, and their welfare appears highly dependent on this near-shore area for such important life history activities as migration, breeding, calving, and feeding.

The barrier islands, the waters of Kasegaluk Lagoon, and wetlands to the east of the lagoon are utilized by shorebirds and waterfowl for spring migration, resting, nesting, feeding, molting, and fall migration staging.

The Kasegaluk Lagoon, barrier islands, nearshore waters seaward and south of the barrier island system comprise an important subsistence usage area to the villagers of Point Lay. Inland areas are utilized for hunting caribou and for fishing in the river



systems of the AMSA. Subsistence activities seasonally occurring in the Kasegaluk Lagoon Candidate AMSA area include egg gathering, waterfowl hunting, sealing, fishing, walrus hunting, and whaling for beluga whales.

**b. Basis for Candidacy:** AS 46.40.210(1)(1), (B), (E), (F), (6) and 6AAC 80.160(b)(1), (2), and (3).

- Area of unique, scarce, fragile, or vulnerable natural habitat, cultural value, historical significance, or scenic importance;
- Area of big natural productivity or essential habitat for living resources;
- Area of unique geologic or topographic significance which is susceptible to industrial or commercial development;
- Area of significant hazard due to storms, slides, floods, erosions, or settlement;
- Area needed to protect, maintain, or replenish coastal land or resources, including coastal floodplains, aquifer recharge areas, beaches, and offshore sand deposits;
- Area important for subsistence hunting, fishing, food gathering, and foraging;
- Area with special scientific values or opportunities, including those where ongoing research projects could be jeopardized by development or conflicting uses and activities; and
- Potential estuarine and marine sanctuaries.
- potential conflicts between development of coal and oil and gas resources and the values mentioned above.

## 2. Geographic Orientation

a. Coastal Region: Arctic

**b. Local Orientation:** North Slope Borough - Point Hope/Point Lay coastal sector.

Kasegaluk Lagoon extends for approximately 140 miles along the Chukchi Sea coast. Approximately 90 miles of the lagoon occurs south of Icy Cape and the remaining portion lies north of Icy Cape in NPR-A.

c. Coordinates: Latitude 70 47' to 70 53'N  
Longitude 158 42' to 158 50'W

d. USGS Quadrants: 1:250,000 Point Lay, Wainwright

## **1.2 CHAPTER ORGANIZATION**

The Phase 1 Report of the Kasegaluk Lagoon AMSA contains the following Sections:

- 1.0 Introduction
- 2.0 AMSA Boundary
- 3.0 Resource Inventory
- 4.0 Resource Analysis
- 5.0 Issues and Conflicts
- 6.0 Management Plan

## **2.0 AMSA BOUNDARY: KASEGALUK LAGOON**

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### **2.1 INTRODUCTION**

Standards for the Alaska Coastal Management Program, 6 AAC 80.160(2), require that a nomination for an AMSA include the following information:

*a map showing the geographical location, surface area, and if appropriate, bathymetry of the area, along with a legal and narrative description of the boundaries and a justification of the size of the area which merits special attention*

The boundaries reflect the reasons, resource values, and potential conflicts used in nominating Kasegaluk Lagoon as an AMSA. These include the following:

- the unique habitat provided by the waters and barrier islands of Kasegaluk Lagoon
- important use areas for beluga whales, including the lagoon, nearshore waters outside the lagoon, and staging areas to the southwest of the lagoon
- inland areas of important habitat for waterbirds, caribou and anadromous fish resources utilized for subsistence by residents of Point Lay
- areas where resource development has potential to directly affect coastal resources within the AMSA, including coal and oil and gas development

These boundaries are drawn to allow a comprehensive management approach to the AMSA, one that involves the appropriate resource users and local, state, federal and private resource managers.

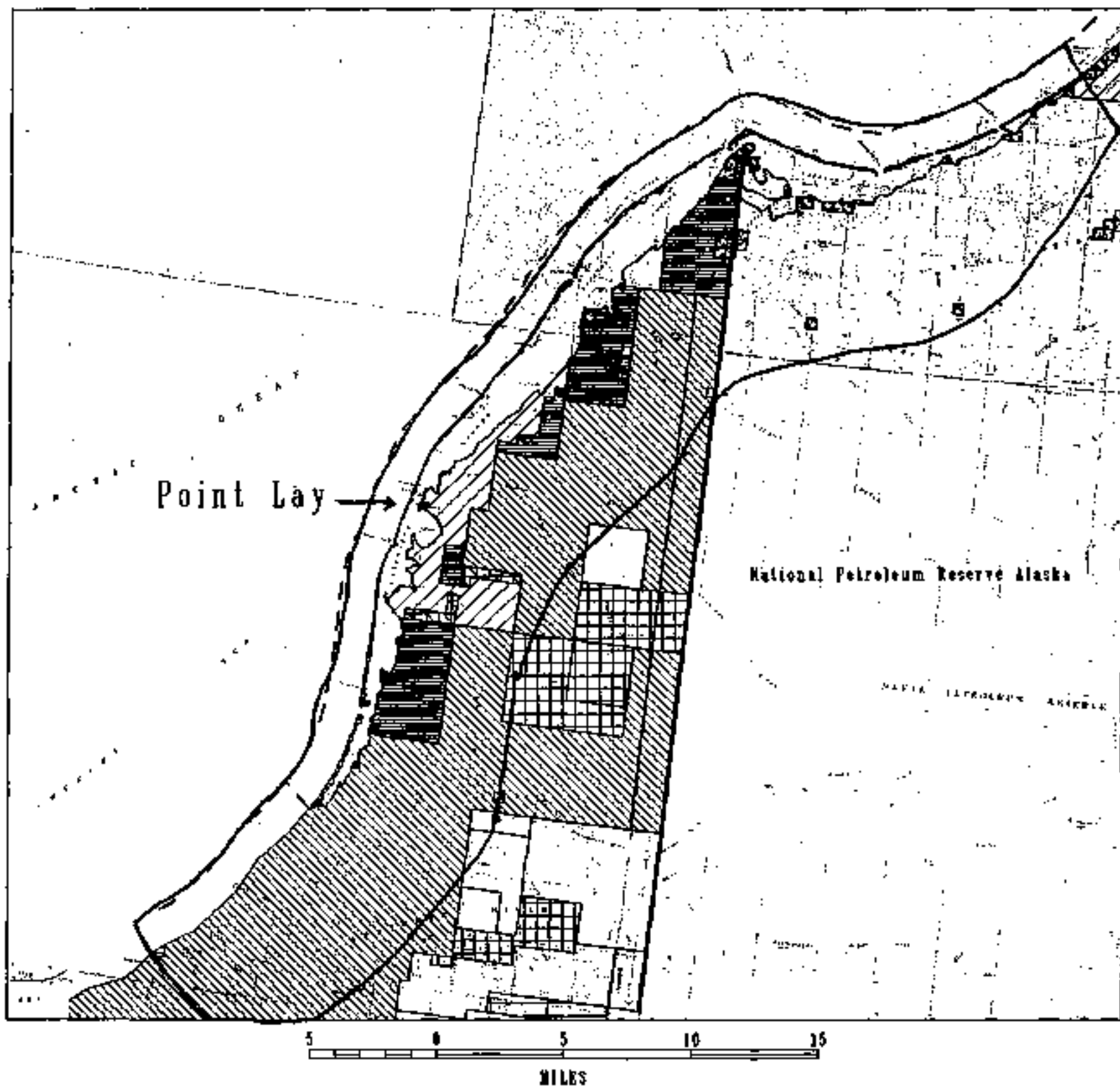
### **2.2 KASEGALUK LAGOON AMSA BOUNDARY**

Map 2-1 shows the boundaries of the Kasegaluk Lagoon AMSA. This AMSA lies within two USGS quadrants: 1: 250,000 Point Lay and Wainwright. Coordinates are 70 47' to 70 53'N Latitude, and 158 42' to 158 50'W Longitude. The boundaries stretch along the coast from the northeast end of the Kasegaluk Lagoon system 50 miles east of Icy Cape, southwest to the mouth of the Pitmegea River. The boundaries of the Kasegaluk Lagoon AMSA include:

- all of barrier islands and mudflats, lagoon waters, and passes between the barrier islands;
- state waters to three miles offshore the barrier islands;

- a one mile corridor on major rivers within the AMSA (the Kukpowruk, Kokolik, Utukok, Avak, and Pitmegea Rivers) to the extent of documented anadromous fish distribution; and
- inland 10 miles from the mean high-water mark.

The Kasegaluk Lagoon AMSA lies entirely within the boundaries of the federally approved North Slope Borough Coastal Management Program.



- State Ownership**
- Selected Land
  - Patented or Tentatively Approved Land
- Regional Corporation Ownership**
- Selected Land
  - Patented or Interim Conveyed Land
- Village Corporation Ownership**
- Selected Land
  - Patented or Interim Conveyed Land
- Federal Ownership**
- Blank
- Native Allotments**
- Native Allotment Applications

# North Slope Borough Coastal Management Program KASEGALUK LAGOON Candidate AMSA Land Status



Kasegaluk Lagoon  
AMSA Boundary

MAP 2-1

**Boundary**

- South of Icy Cape: All waters of Kasegaluk Lagoon up to the mean high water mark of the coast, the barrier islands, including portions connected to the mainland and nearshore waters seaward of the barrier islands three miles.
- North of Icy Cape: All waters of Kasegaluk Lagoon up to the mean high water mark of the coast, the nearshore waters seaward of the barrier islands three miles. The barrier island northeast of Icy Cape are under Federal jurisdiction and are therefore not included within the Kasegaluk Lagoon Candidacy.

Prepared by the N.S. B. Planning/Geographic Information System

## **3.0 RESOURCE INVENTORY: KASEGALUK LAGOON**

Information provided in this Resource Inventory for the Kasegaluk Lagoon AMSA is intended to supplement resource information provided in the approved North Slope Borough Coastal Management Program (April 1988). A general resource overview of the AMSA is provided in Chapter 3.0 (Natural Resources) and Chapter 6.0 (Areas Meriting Special Attention) of that document. The following discussions provide updated information on coastal habitats, resources, and uses and activities in the subject area to highlight factors important to the designation as an Area Meriting Special Attention.

### **3.1 BIOLOGICAL RESOURCES**

#### **3.1.1 Coastal Habitats of the AMSA**

The coastal area between Icy Cape and the southern end of Kasegaluk Lagoon is a long, narrow, shallow lagoon with few tidal passes. It is backed by a low tundra cliff 3 meters or less in height. The cliffs typically are fronted by fringing gravel beaches varying in width from about 10 to 100 meters. Some lagoon locations are backed by mud flats, and at the mouths of small streams there are often small estuaries, deltas, and marshes. On the seaward side of the lagoon are relatively stable barrier islands and spits. The more stable barrier islands have dunes on them.

At Icy Cape, the mainland tundra just south of Icy Cape consists of elevated sites with upland tussock tundra and frost boils interspersed with flooded tundra, low-center polygons, and freshwater wetlands. The vegetation community along the lower parts of the bank of the Kukpowruk River at Point Lay support saxifrage, horsetail, and grass communities. The upper portions of the river bank support a scrubby growth of willows and dwarf birch which is usually two to three feet high (USFWS, 1988).

Within the Kasegaluk Lagoon AMSA, some of these low-lying coastal features such as bars, barrier islands, and channels show extensive movement. Low-profile barrier islands and spits seem to be migrating landward at rates of 1-2 meters per year. There is also some evidence of northward movement of the barrier islands. Seaward of the barrier islands is an ever-changing set of moving, parallel sand and gravel bars and sandwave fields (Lewbel and Galloway, 1984).

From southern Kasegaluk Lagoon to Point Hope, the coastal area is characterized by high relief with tall cliffs of Permian and Triassic sandstone and shale bedrock along the coast.

The cliffs increase in height to the south reaching an elevation of approximately 300 meters at Cape Lisburne (Lewbel and Gallaway, 1984).

The vegetation at Cape Thompson appears to be some of the richest in the Arctic. There are three vegetation types in the area: Eriophorum tussock (most abundant); Dryas fell-field; and Eriophorum - Carex wet meadow (USFWS, 1988).

The coastal habitats of the Alaska Coastal Management Program which occur in the area of the Kasegaluk Lagoon AMSA are described in the resource inventory of the North Slope Borough coastal management program.

### 3.1.2 Freshwater and Marine Fish Resources

#### Anadromous and Freshwater Fish:

Within the area of the Kasegaluk Lagoon AMSA, information concerning the distribution and abundance of fish resources in freshwater aquatic habitats is extremely limited. Part of this deficiency can be attributed to the limited availability of suitable overwintering habitat for fish, but for the most part comprehensive fisheries surveys have not been conducted in the area due to costs, logistical difficulties, and the presence of minimal development activity to impact aquatic habitats. Winters et al. (1988) recently completed a bibliographic review of fisheries research conducted on the North Slope, and studies pertinent to the Point Lay - Wainwright area (Cape Beaufort to Point Franklin) are appropriately indexed. Maps 1 and 2 show the fish distribution for the Kasegaluk Lagoon and Point Hope areas.

Arctic aquatic habitats in the Kasegaluk Lagoon AMSA area are very cold with annual averages of only 1 degree C in coastal waters and 2.5 degrees C in large rivers. Winter freezing often reduces stream habitat available to fish by up to 95%. Where sufficient stream water is present, winter ice commonly thickens to about 2 meters by late winter. The combination of a sharp reduction in water input to the streams and the formation of thick ice results in the absence of water at most locations. The severe reduction in availability of unfrozen water increases the importance of the few remaining sites which are available and accessible to overwintering fish. The availability of fish overwintering habitat is a clear example of a critical habitat since (1) overwintering areas are scarce, (2) it is imperative that fish have access to such sites, and (3) essentially all life history stages of a species (incubating eggs to adults) are "captive" at an overwintering site until spring breakup. Under these conditions, fish are particularly vulnerable to any habitat disturbance or alteration.

Due to the reduced availability of food during the winter and the cold temperatures in freshwater streams, fish must accumulate most of their year's food reserves during the

ANADROMOUS FISH  
STREAM

ARCTIC CHAR - AC

PINK SALMON - P

CHUM SALMON - CH

WHITE FISH

FEEDING  
SPAWNING

Point Lay

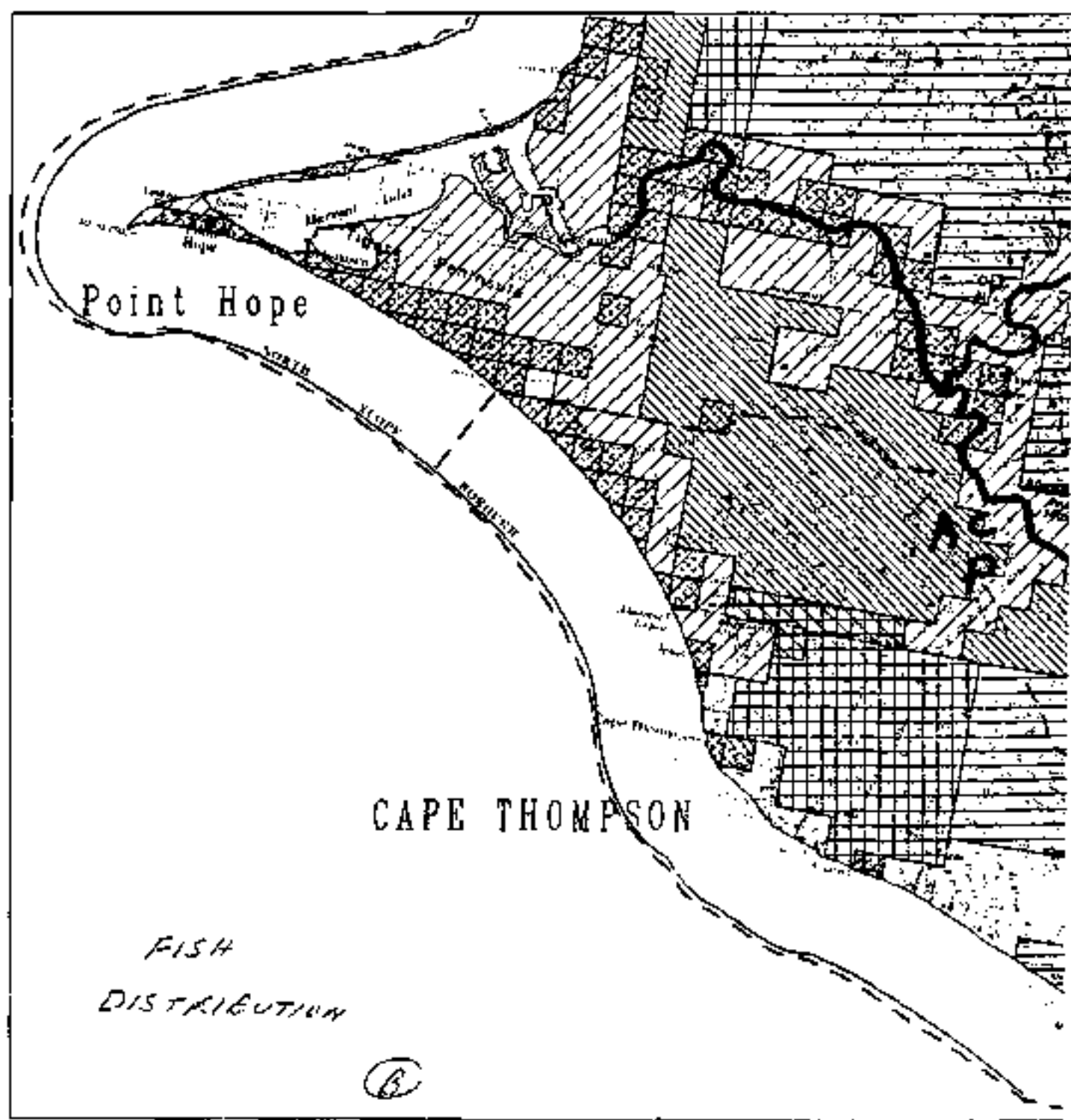
National Petroleum

FISH  
DISTRIBUTION

5 0 5 10 15  
MILES

(A)





brief 3-month summer period. In addition, densities of fish prey in Arctic rivers are generally very low (Craig, 1989a). To take best advantage of the environmental conditions of streams along the Chukchi coast, anadromous fish have become adapted to seasonal movements to more productive coastal waters where prey species are more abundant. Densities of available prey in coastal marine waters are about five times greater than in freshwater tundra and coastal plain streams, and about 10 times greater than streams which originate at higher elevations in the mountains of the western Brooks Range (Craig, 1989a).

The period of freshwater habitation for anadromous fish is then limited to spawning and overwintering of incubating eggs, with outmigration to marine coastal waters during the period of stream break-up. The coastal "dispersal" of Arctic fish are quite dissimilar to the impressive ocean migrations of salmon in more southerly regions of the state.

Fish species which may occur in streams of the Kasagluk Lagoon AMSA include Dolly Varden/char, Bering cisco, least cisco, broad whitefish, and humpback whitefish (Craig, 1989a).

Small runs of pink and chum salmon enter the Utukok, Kokolik, and Kukpowruk Rivers in late July and early August. Stream waters within this area are characteristically soft, having low values for alkalinity and hardness, and neutral pH. Rapid changes in water level and turbidity are common in response to precipitation in the watersheds, and these effects were noted throughout the open water season. Pink salmon and a few chum salmon are the principal anadromous fish harvested at Point Lay. All five species of Pacific salmon (king, sockeye, silver, pink, and chum) may occur in small numbers in the larger drainages north of Point Hope. However, only pink and chum salmon appear to have viable populations. King, silver, and sockeye salmon probably occur in this area as strays, since often only a single specimen is caught.

Pink and chum salmon are probably able to main small stocks by virtue of the relative cold tolerance and predominantly marine life cycles (no period of freshwater rearing before migrating to the sea). Craig and Halderson (1986) predicted that salmon populations (particularly pinks) in Arctic rivers undergo relatively frequent cycles of colonization - extinction compared to other anadromous species, and that straying pink salmon to non-natal streams would allow the species to repopulate marginal sites.

Fisheries surveys in the Kokolik River (Craig and Schmidt, 1985) noted that the most commonly collected fish species in the lower river were rainbow smelt, Arctic grayling, pink salmon, and several marine species in the brackish delta waters. The Kokolik River supported a few specimens of Arctic char and chum salmon, but these were assumed to be strays from other drainages. During 1983 surveys, approximately 78% of the summer

subsistence harvest was comprised of pink salmon and Pacific Herring. Residents also indicated that grayling were harvested from the Kukpowruk River in the fall fishery of 1983.

**Anadromous Fish** - The catalog of waters important to anadromous fish is maintained by the Department of Fish and Game to identify waterbodies which have documented use by anadromous fish which must spend at least part of their life cycle in the marine environment. The spawning, rearing, and overwintering life functions which are completed in freshwater aquatic systems are of integral importance to these populations of salmon and Arctic char.

Pink and chum salmon are the principal salmon species which occur within and adjoining the AMSA area. These species are capable of utilizing aquatic habitats in rivers that maintain continuous winter flow, at least as intergravel flow, since they outmigrate to marine waters in the spring immediately after the fry emerge from the gravel. A very small number of stray king, coho, or sockeye salmon may occasionally occur in Kasegaluk Lagoon or the major rivers of the area, but their presence is limited since these species must rear in freshwater systems for several years before traveling to marine waters as smolts. Within the AMSA area, suitable rearing and overwintering habitats for anadromous fish are severely limited. Streams within and adjoining the Kasegaluk Lagoon AMSA which have been documented to support anadromous fish are listed below.

<u>Watercourse</u>	<u>Anadromous Fish Present</u>
Pitmegea River	pink salmon chum salmon Arctic char
Kukpowruk River	pink salmon chum salmon Arctic char
Kokolik River	pink salmon chum salmon Arctic char
Utukok River	pink salmon chum salmon Arctic char

Source: ADFG, 1988

### Marine Fisheries:

Craig and Schmidt (1985) reported catches of fish in Kasegaluk Lagoon consisting primarily of marine species: Pacific herring, Arctic and saffron cod, capelin, fourhorn sculpin, and Arctic flounder. Pink salmon, and occasional Arctic cisco, Arctic char, least cisco, and chum salmon were also found in Kasegaluk Lagoon.

As part of the Outer Continental Shelf Environmental Assessment Program, Feckheim et al. (1984) conducted an initial assessment of fishery vulnerability to potential petroleum development near Point Lay in 1983. Fyke and gill net sampling during the summer captured 17 species of fish totaling 14,437 individuals. Marine species accounted for nearly 99% of the catch with the dominant species being Arctic cod (39%), capelin (25%), fourhorn sculpin (20%), and Arctic flounder (13%). The most abundant species taken by gillnet were Pacific herring (48%), fourhorn sculpin (18%), boreal smelt (rainbow smelt) (17%), and Arctic flounder (9%). Only 3 Arctic char, 2 least cisco, 2 Bering cisco, 1 chum salmon, and 34 pink salmon were caught in the Point Lay nets, indicating a virtual absence of anadromous fish when compared with results of similar Bering Sea fisheries surveys.

#### **3.1.3 Waterbirds and Seabirds**

Within the area of the Chukchi Sea adjoining the Kasegaluk Lagoon AMSA, the primary uses of coastal habitats by birds are nesting (summer), foraging (spring and fall), and staging and molting (summer and fall). Important nesting areas are the coastal cliffs near Cape Lisburne, and the barrier island along Kasegaluk Lagoon. The persistent nearshore lead system through the ice in the spring is an important migration pathway for waterfowl. Open waters within 60 to 120 km of the cliff-nesting seabird colonies and the waters of Ledyard Bay are primary foraging areas for seabirds. Coastal bays, lagoons, and salt marshes of the Kasegaluk Lagoon AMSA are important staging and molting areas for waterfowl and shorebirds (Minerals Management Service, 1984). Maps 3 through 6 show important waterfowl use areas for Kasegaluk Lagoon and Point Hope areas.

Seabirds - The southern Chukchi Sea is a major transition area for pelagic seabirds. Although it is part of the Arctic Basin which has low bird densities, it is adjacent to the northern Bering Sea which has abundant and diverse pelagic avifauna. The area is generally ice-covered from approximately November through June. During spring migration in May and early June, seabirds are restricted to open water leads. When the ice decomposes in June to early July, densities of seabirds in marine waters can be expected to be low, except near seabird nesting cliffs and intensive feeding areas such as Ledyard Bay. The maximum number of feeding seabirds will be present in late summer and early fall as cliff-nesting species are feeding their young and post-breeding migration is well underway (Hameedi and Naidu, 1988).

WATERFOWL

NESTING CONCENTRATION



FALL CONCENTRATION



SPRING & FALL  
CONCENTRATION



Point Lay

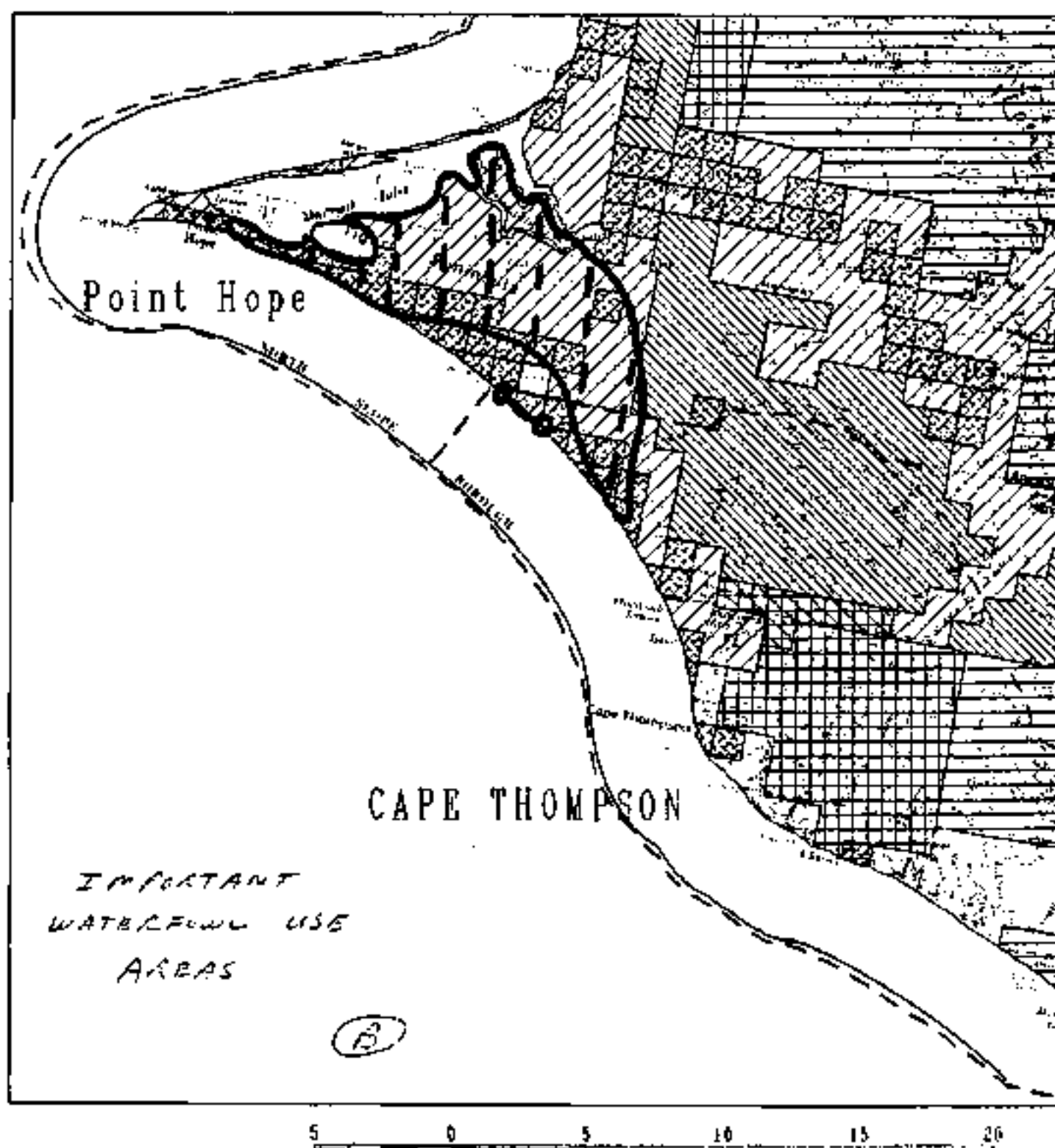
National Petroleum Reserve A.

SAGE PLAINS

IMPORTANT  
WATERFOWL USE  
AREAS

(B)





# GEESE

NESTING CONCENTRATION



FALL CONCENTRATION



SPRING & FALL  
CONCENTRATION



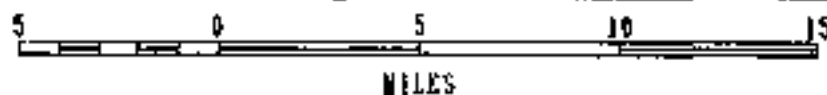
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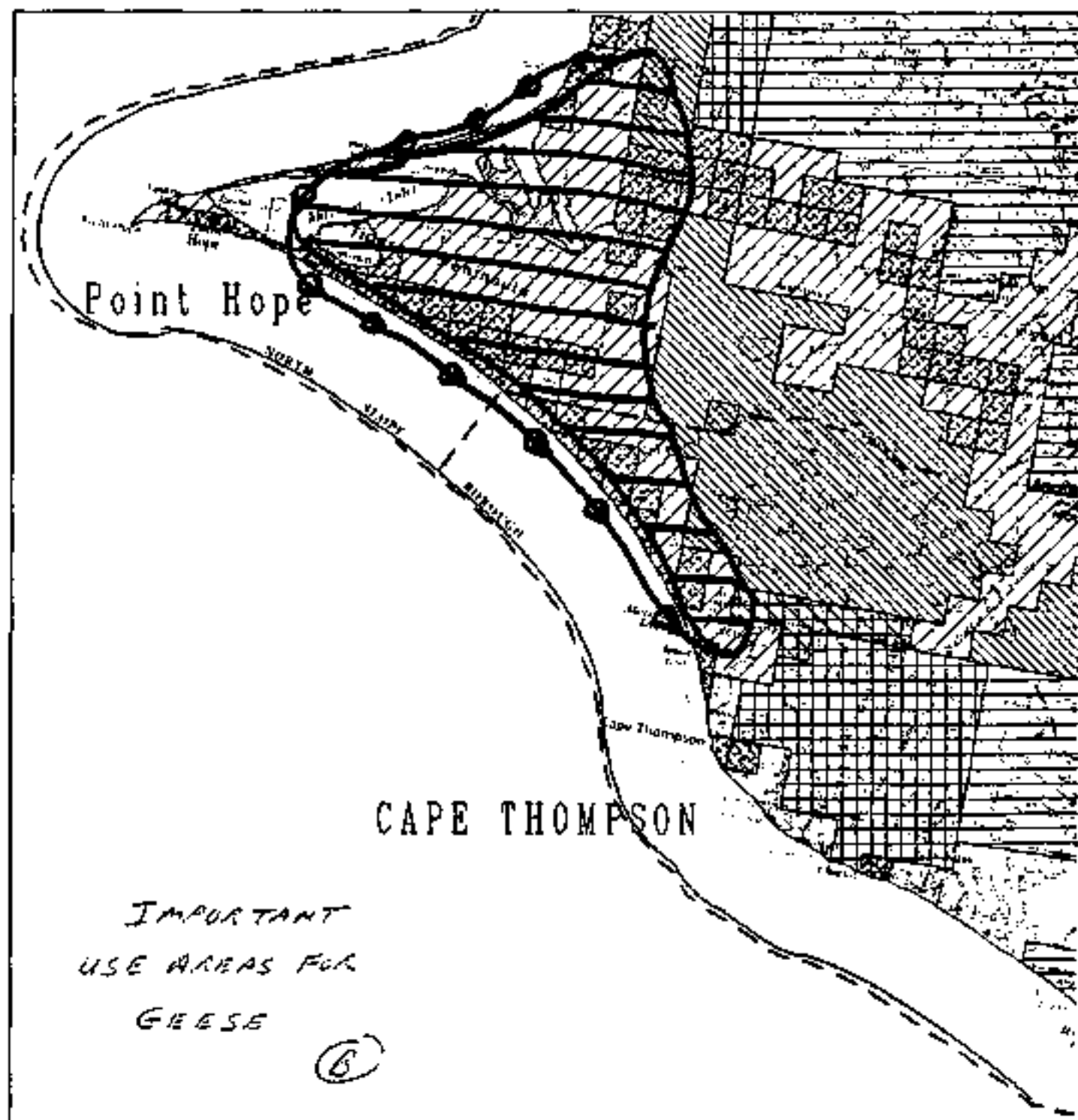
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NATURAL PRESERVE

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USE AREAS FOR  
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(A)







The coastal waters surrounding Capes Lisburne, Lewis, and Thompson are primary and secondary summer feeding zones important to cliff-nesting seabird colonies. The secondary feeding zone extends more than 125 km north and east of Cape Lisburne, encompassing most of Ledyard Bay and reaching nearly to the southern end of Kasagaluk Lagoon (Roseneau and Herter, 1984).

The location of colony sites and the population of colonial-nesting seabirds in the area between Cape Thompson and Cape Lisburne is maintained as a computer file by the U.S. Fish and Wildlife Service to update the information provided in the Catalog of Alaska Seabird Colonies. The seabird colonies provide nesting habitat for the following species:

Pelagic Cormorant	Arctic Tern
Glaucous Gull	Aleutian Tern
Common Murre	Mew Gull
Thick-billed Murre	Black-legged kittiwake
Horned Puffin	Pigeon Guillemot
Black Guillemot	Tufted Puffin

Murres comprise the most numerous seabird, followed by black-legged kittiwakes and horned puffins. In 1960 Cape Thompson has nearly 400,000 murres present, but the population has declined markedly in recent years (USFWS, 1988). The seabird populations by identified U.S. Fish and Wildlife Service colony site are provided below:

Colony No.	Colony Name	Seabird Population
129-001	Crowbill Point	6852
129-002	Artigotrat	133,952
129-003	Agate	53,700
129-004	Cape Thompson	18,484
129-005	Imnakpak Cliff	211,984
129-008	Kilikralik Pass	150
129-011	Iviagik Mountain	20
129-012	Cape Dyer	102
129-014	Cape Lewis	28,440
129-015	Noyalik Peak	71
129-016	Niak Creek	2
129-017	Cape Lisburne	157,768
129-018	Sapumik Ridge	49

Source: U.S. Fish and Wildlife Service, 1989

Waterfowl - Numerous waterfowl and geese use the open water leads adjoining the Kasegaluk Lagoon AMSA in the spring during their northward migration to North Slope nesting areas. In a similar manner, the wetlands, mud flats, and salt marshes of Kasegaluk Lagoon provide molting, staging, and feeding habitats for waterfowl throughout the summer and fall. Some waterfowl species, such as eiders, are able to utilize the habitats of the Kasegaluk Lagoon barrier islands for nesting habitat.

Several thousand common eiders are concentrated at colonies along the barrier islands of Kasegaluk Lagoon. These colonies range up to several hundred birds each, and most are located between the northern end of the lagoon and Point Lay. The most populated eider colonies are located on Solvik Island (614 common eiders) and East Akoliakatat Pass (442 common eiders).

Eider eggs are usually laid between mid-June and mid-July, with hatching occurring from mid-July through early August. Productivity and nesting success varies considerably from year to year; nesting success for eiders using barrier islands seems very dependent on the accessibility of the island to mammalian predators, principally Arctic fox (Roseneau and Herter, 1984).

Flocks of molt-migrant eiders are present in Kasegaluk Lagoon after midsummer where they frequent the deeper ocean passes. However, the majority may settle throughout the nearshore waters off Point Lay and in Ledyard Bay for much of July and August. Large movements of eiders (primarily king eiders) begin along the coast of western Ledyard Bay by late July or early August. During a five-day period of observation in 1980, about 50,000 birds were estimated to pass Cape Lisburne each day. South of Cape Lisburne, eiders proceed along pathways further offshore (Roseneau and Herter, 1984). Common and king eiders are important subsistence resources for hunters from Point Lay and Point Hope.

Kasegaluk Lagoon is important to oldsquaw ducks, particularly molt-migrant birds consisting of males, failed breeders, and non-breeders from more southerly areas of northwest Alaska. By mid-July, relatively large numbers of these molting birds become established in the lagoons and along the barrier islands of the AMSA. Known molting areas include the northeastern sector of Kasegaluk Lagoon east of Icy Cape and the deeper portions of Kasegaluk south of Icy Cape. Scattered flocks of oldsquaw may also be present in the southern portion of Kasegaluk Lagoon and at various points in Ledyard Bay. The fall migration is well under way by September, and tends to be more conspicuous than the spring migration. Oldsquaws are an important subsistence resource for local subsistence hunters, although these ducks tend to be less preferred than geese or eiders (Roseneau and Herter, 1984).

**Shorebirds** - A variety of shorebirds migrate through the coastal area of the AMSA during late May and early June. Principal early season use is made of tundra habitats, primarily for nesting. Common species include pectoral sandpipers, dunlins, semipalmated sandpipers, and western sandpipers. Typical summer densities for these shorebirds in tundra habitats at Icy Cape range from 7 to 20 birds per square kilometer. Flocks of shorebirds begin to frequent the littoral zone (shallow water), including marshes and mud flats, during July with the numbers of birds continuing to increase through mid-August. Icy Cape may provide a principal staging area for a majority of the shorebirds along the Chukchi coastline since appropriate habitats appear more abundant here than in other areas along the coast. Late summer densities of shorebirds (semipalmated sandpipers, western sandpipers, dunlins) on salt marshes at Icy Cape reached over 500 birds per square kilometer during a survey in 1980. Small concentration of shorebirds in similar densities may frequent the remainder of Kasegaluk Lagoon (Roseneau and Herter, 1984). The salt marshes, mud flats, and beaches of the AMSA will continue to be used by shorebirds until about mid-September when they migrate south.

### **3.1.4 Marine and Terrestrial Mammals**

#### **Marine Mammals:**

The movement and distribution patterns of all marine mammals in the vicinity of the Kasegaluk Lagoon AMSA are affected, and generally governed by, the seasonal cycle of sea ice. In winter, the nature and extent of fast-ice cover determines the distribution and abundance of polar bears, ringed seals, and arctic foxes in nearshore areas. The timing and nature of the open-water flow zone between the shorefast ice and Chukchi pack ice controls the timing of spring migration of bowhead whales, beluga whales, walrus, bearded seals, and migrant ringed seals. The timing of break-up for coastal shorefast ice determines the accessibility of nearshore littoral habitats for spotted seals, beluga whales, and gray whales (Davis and Thomson, 1984). Maps 7 and 8 show important use areas for marine and terrestrial mammals in the the Kasegaluk Lagoon and Point Hope areas.

**Walrus** - The ice-associated walrus are present in the offshore waters of the Kasegaluk Lagoon AMSA north of Icy Cape during the summer as the pack ice recedes northward. When the pack ice edge is over deep water of the continental shelf and the sea bed is not accessible to the benthic-feeding walrus, many animals may use a haul-out site northeast of Cape Lisburne (Davis and Thomson, 1984). Ice conditions also control the accessibility of walrus to subsistence hunters at Point Lay.

**Spotted Seals** - Spotted seals are adapted to breed on the pack ice, migrating to nearshore areas of Kasegaluk Lagoon to utilize the littoral habitats for feeding and resting during the summer. The lagoons and barrier islands of Kasegaluk provides a preferred habitat for

POLAR BEAR  
DENNING

SPOTTED SEAL  
HAUL-OUT  
CONCENTRATION

WALRUS  
HAUL-OUT

BELUGA  
CONCENTRATIONS

BELUGA SUMMER  
USE AREAS

RINGED SEAL  
BREEDING &  
PUPPING

BROWN BEAR  
FEEDING CONCENTRATION

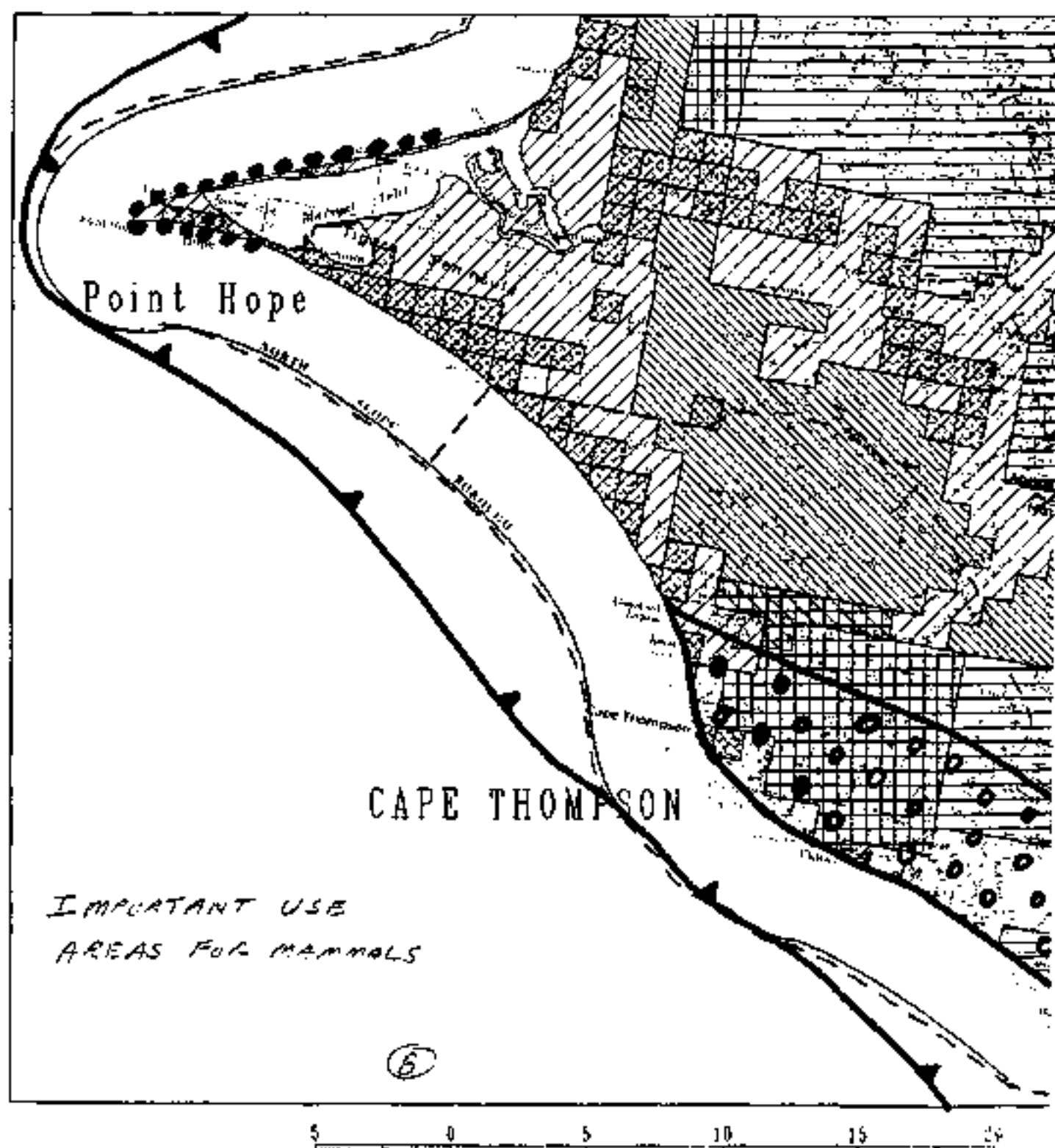
Point Lay

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IMPORTANT  
USE AREAS  
FOR MAMMALS

5 0 5 10 15  
MILES

(A)



spotted seals in the Chukchi Sea region from May to October. Two major haul-out areas for spotted seals occur at Akoliakatat Pass and Utukok Pass. More than 1,000 seals frequent each of these two locations, with smaller populations using other locations within and adjoining the AMSA opportunistically. Spotted seals are regularly observed in the nearshore waters of western Ledyard Bay north of Cape Lisburne but they do not generally haul-out in this area. Spotted seals prefer to haul-out at protected locations, especially on sand and gravel spits, moving into the lagoon to feed (Davis and Thomson, 1984).

Fish provide the principal prey for spotted seals; in the Chukchi nearshore area, their diet may be composed of marine fish such as capelin, smelt, Arctic and saffron cods, and sculpins.

Bearded Seal - The bearded seal is an animal of the pack ice. In winter, it occurs over the shallow waters of the Bering Sea; some animals may winter in the pack ice and shear zone of the Chukchi Sea but most are excluded because of heavy ice cover. Spring movement northward through the coastal area adjoining the AMSA from late May to late June is primarily along the flow zone. Bearded seals feed on marine benthic organisms in waters up to 75-100 meters in depth. They do not haul out on land, and only low densities of this seal are present in open water south of the pack ice (Davis and Thomson, 1984).

Ringed Seals - The ringed seal is strongly associated with the presence of ice. Stable, shorefast ice is the preferred habitat of breeding ringed seals (Davis and Thomson, 1984). Frost et al. (1987) noted that the population density of ringed seals in areas of shorefast ice during the winter is greatest where there is deformation of the grounded ice. The convoluted surface is apparently necessary to create snow drifts in which ringed seals excavate their birthing lairs.

In the vicinity of the Kasegaluk Lagoon AMSA, winter densities of ringed seals in near-shore areas were 30-50% as large as those at distances greater than two nautical miles from shore (Frost et al., 1987). During two years of ringed seal surveys (1978 and 1985), the shorefast ice from Cape Lisburne to Point Lay had the highest ringed seal density of the Chukchi Sea areas surveyed.

As the coastal fast ice breaks up during the summer, ringed seals move offshore to pack ice where most of the population will remain until freeze-up in the fall. Small numbers of subadult ringed seals may remain in the open water south of the pack ice.

Ringed seals have a marked seasonal variability in diet with crustaceans providing the principal prey in spring and summer, and Arctic cod forming the bulk of the diet in the winter. The October-November feeding period is probably critical to the annual energy cycle of

the ringed seal as they rapidly replenish lost body weight while feeding on Arctic cod (Davis and Thomson, 1984).

**Polar Bear** - Point Lay is situated at approximately along the approximate boundary between two general populations of polar bears which inhabit the Chukchi Sea. The distribution and abundance of polar bears are tied directly to sea ice and the presence of seals, primarily ringed seals. In the fall, bears move toward the coast as new ice begins to form. Pregnant females occupy dens on land near the coast in November and December, while the remainder of the polar bear population is distributed over the winter sea ice.

Polar bears are opportunistic feeders, and transitory concentrations may occur at whale carcasses and at areas of thin ice where seals are easily accessible. Minor concentrations of bears tend to recur at Icy Cape during the fall and winter. Changes in the distribution of polar bears have been noted in response to major changes in seal populations and distribution.

Cubs are born in December in snow dens, primarily on land; maternal dens may also be located on drifting sea ice. Cubs leave the den in March or April to travel with their mothers until they are weaned at about 28 months of age.

Ringed seals are the principal prey of polar bears, but they also utilize bearded seals, carrion, and kills made by other bears. Polar bears will also take beluga whales which become trapped in newly-formed ice. In the AMSA area, the bears frequent the coastline in search of beached carrion, including the carcasses of seals, bowheads, belugas, and walrus (Davis and Thomson, 1984).

**Beluga Whales** - Beluga whales winter primarily in the Bering Sea, following the shear zone lead system and adjacent loose pack ice northward along the coast of the Chukchi Sea in the spring. Peak passage of an eastern Beaufort stock (Mackenzie estuary) occurs along the offshore area of the Kasegaluk Lagoon AMSA in April and May. A second group of belugas moves into the eastern Chukchi Sea area after the Beaufort Sea stock has passed. This group summers in the Kasegaluk Lagoon area and numbers between 1,500 to 2,500 animals; there can be substantial annual variability in the population.

Belugas arrive in the Kasegaluk Lagoon area in mid- to late June after the fast ice has broken away from the coast. There is some concern that these whales could be the same stocks which utilize the Kotzebue Sound area earlier in the year, thereby creating an important management problem. Belugas concentrate in the passes leading into the lagoon from late June to early August, but they spend most of their time in the nearshore waters outside the lagoon. Most calving occurs at this time, and the whales also actively

feed in the area. Conception occurs in May, gestation last 14.5 months, and lactation extends for two years. Female belugas produce a single calf about once every three years.

Although found primarily in the Kasegaluk area in July and early August, small numbers of belugas may also be present in other nearshore waters from Cape Lisburne to Barrow. In mid-August, the beluga whales depart the coastal waters and area of Kasegaluk Lagoon but their movements at this time are poorly understood. It is possible that the whales move offshore where they associate with the loose ice in the southern fringe of the pack ice (Davis and Thomson, 1984).

Although feeding studies of belugas have not been conducted in the Kasegaluk Lagoon area, it is probable that their diet includes saffron cod, smelt, capelin, salmonids, and sculpins. According to hunters, early-arriving belugas have usually eaten shrimp, squid, and small fish.

About 50-60 belugas are harvested annually in the Chukchi Sea area. At Point Lay, the whales are taken in drive hunts in the shallow waters of Kasegaluk Lagoon; the loss rate is near zero.

In late September and October, belugas have been observed in open pack ice 100-150 km offshore. Little information is available concerning the timing and migration routes through the Chukchi Sea in the fall; however, there is no evidence to suggest that a coastal migration occurs.

**Bowhead Whales** - The bowhead whale winters in the Bering Sea and migrates through the Chukchi Sea to summering grounds that are primarily in the Canadian Beaufort Sea. From mid-April to mid-May in response to ice conditions, bowheads migrate along the shear zone lead system past Point Hope and Cape Lisburne and along the offshore waters of the Kasegaluk Lagoon AMSA. Major movements can occur in late May in response to heavy ice conditions. Historical whaling records suggest that the Chukchi Sea may have provided summering areas for bowhead whales in the past; however, there are very few summer observations for any areas west of the Canadian Beaufort in recent years.

Fall migration of bowheads does not follow the Chukchi coastline, but apparently crossing the Chukchi Sea to the area of Wrangell and Herald Islands.

Mating of bowheads occurs from March through May, and thus some mating may occur when whales are migrating through the shear zone lead system along the Chukchi coastline in the spring. Records of spring bowhead sightings are generally 20 to 50 km offshore from the Kasegaluk Lagoon area, with many sightings northwest of Icy Cape (Davis and Thomson, 1984).



A satellite image study of the Chukchi Sea area where bowhead whales commonly are observed in September and October before they move south to the Bering Sea showed intense eddying that may have concentrated zooplankton in denser patches, thereby making an attractive feeding ground (AOGA, 1989).

**Gray Whales** - Gray whales migrate along the coastal area of the Kasegalik Lagoon AMSA during both the spring and fall migratory periods. The gray whale is not typically associated with ice, and the main movements into the coastal waters of the Chukchi Sea occur after the pack ice has retreated northward (Davis and Thomson, 1984).

Gray whale distribution and highest densities have been found to correspond closely to areas where dense prey assemblages have been documented (Ljungblad, 1987). Benthic samples collected from coastal waters north of Cape Lisburne are dominated by epibenthic isopods (*Tectacaps* spp.) that perch or crawl across the bottom. The stomach of a gray whale killed by a killer whale in this area was noted to be full of isopods.

Gray whales are most commonly observed from 0.5 to 140 km from shore in water 7 to 60 meters in depth. Although 97% of all gray whales are observed during periods of open water, whales in the northeastern Chukchi Sea are sometimes found in waters with up to 30% ice coverage. The nearshore area from Cape Lisburne to Wainwright is recognized as an area of relatively high densities of gray whales during the summer (Ljungblad, 1987).

#### **Terrestrial Mammals:**

Within the area of the Kasegalik Lagoon AMSA, terrestrial mammal populations of importance include the caribou of the western Arctic herd and, on the Lisburne Peninsula, the expanding muskox herd at Cape Thompson.

The western Arctic caribou herd has been increasing in recent years and now stands at 230,000 or more animals. In recent years, the post-calving aggregation of the herd has migrated through the Lisburne Peninsula. In some years, a portion of the herd has wintered on the Lisburne Peninsula and near Cape Thompson.

Use of the Kasegalik Lagoon area by caribou may occur following the dispersal of animals after calving; however, there are no unique or consistently used coastal habitats which are of significant importance to the caribou population. The coastal area may be most important in providing some relief from insect harassment.

A transplanted herd of muskox was started at Cape Thompson with the introduction of 36 animals in 1970. An additional 36 muskox were transplanted to the area in 1977, and today the population is estimated at 125. This herd has failed to thrive as well as muskox

transplants in other parts of the state. Possible explanations include poaching or dispersal of small groups of animals eastward into the Brooks Range.

### 3.1.5 Traditional Fish Harvest Areas

Many of the traditional sites used in the past to harvest resources are still used today. Two islands located on the ocean side of Kukpowruk Pass were used to set up a fish camp during July to September. Gill nets were used to catch Dolly Varden, "trout", humpback whitefish, and herring. During the winter, Arctic grayling were caught in the Kukpowruk River (upriver to where it enters the Amatusuk Hills), particularly in association with caribou hunting. During August and September, Arctic grayling, "trout", and occasionally silver, chum, and pink salmon were caught in gill nets on the Kukpowruk River. The mouth of the Kukpowruk was considered a good location for gill net fishing during the summer. After freeze-up, most of the fishing was done with a hook through the ice (Neakok et al., 1985).

Camps were also located on the mainland along Kasegaluk across from lagoon entrances where there was access to the mainland for fresh water and caribou, and access to the sea for marine mammal hunting (Neakok et al., 1985).

### 3.1.6 Threatened and Endangered Plants and Animals

Historically, peregrine falcons have been reported to nest in the vicinity of the coastal cliffs used by colonial seabirds near Cape Thompson, Cape Lewis, and Cape Lisburne. At the present time, there have been no recent reports of active peregrine falcon nest sites in that area. Peregrine falcons may migrate through the area of the Kasegaluk Lagoon AMSA during the spring or fall as they move to nesting areas on the North Slope or western Brooks Range. However, their occurrence will generally be limited and transitory.

At the present time, there are no plants formally listed Under the Endangered Species Act within or adjacent to the Kasegaluk Lagoon AMSA. However, the U.S. Fish and Wildlife Service has established a series of categories as an interim classification to reflect current assessments of the status of candidate plants. Category 1 includes those plants for which there is adequate information available at this time to support a proposal to list as threatened or endangered. In the area encompassed by and adjoining the Kasegaluk Lagoon AMSA the following species of plant has been identified under Category 1:

- *Rumex krussei* - This small Arctic sorrel is endemic to Russia and has been found only twice in Alaska, once near Cape Thompson.

## **3.2 Physical Environment**

### **3.2.1 Climate**

The climate of this area is characterized by strong winds, fog, cold temperatures, and little annual precipitation. During the winter, the region is dominated by Arctic anti-cyclone pressure systems. The winter regime produces intense cold, low cloudiness, and light snow. Low pressure systems prevail in summer during ice-free periods and are characterized by cloudy skies, frequent precipitation, and southwesterly winds. The coastline is windy year-round with an average wind speed of 10-13 mph. Prevailing winds are from the northeast, and winds of 100 mph have been reported.

In the Cape Thompson - Cape Lisburne area south of the Kasegaluk Lagoon AMSA, the average winter temperatures range from 128 degrees F to 21 degrees F; in summer the range is 28 degrees F to 54 degrees F. Average annual precipitation is about 13 inches with an average annual cumulative snow depth of about 50 inches (USFWS, 1988).

Wind conditions along the coast reflect two major classes of factors: areawide pressure system effects and local thermal effects (sea breeze). The prevailing winds during most seasons are primarily from the northeast and secondarily from the southwest. Major storm winds in summer and fall blow from the southwest, a direction giving them maximum fetch during the open water season.

When winds due to area-wide pressure systems are minimal, the thermal contrast between the coast and the ocean during the summer results in the development of onshore winds, or sea breezes. During August, the sea breeze is present approximately 18% of the time. Wind direction and velocity are strong determinants of the movement patterns of water-borne pollutants (Lewbel and Gallaway, 1984).

### **3.2.2 Oceanography**

The northward flowing Alaska Coastal Current (ACC) moves around Cape Lisburne and travels along the offshore area adjacent to the Kasegaluk Lagoon AMSA. Beyond depths of 20-30 meters, the ACC and Bering Sea Water dominate the circulation patterns over most of the shelf. Nearer shore, eddies occur downstream from major points of land and upwelling at the coast is common under certain meteorological conditions (Lewbel and Gallaway, 1984).

Tides are small in the eastern Chukchi Sea, ranging on an average less than 30 cm. The tide are of the semi-diurnal type. Wind-driven currents cause variations in sea level far in

excess of those produced by the tides (up to 3 meters). These sea level changes strongly influence the water mass properties in the nearshore areas and can subject beaches to wave action (Hameedi and Naidu, 1988).

The Alaska Coastal Current may rework the sea floor sediments out to approximately 70 km from shore. The sediments underlying the ACC consist of lag gravels and sand. Between Icy Cape and Barrow, the sediments are thickest near the shoreline, reaching a maximum depth of approximately 15 meters; the thickest sediment lies in the shoals off the capes and landward of the barrier islands. Extensive gravel beds are found near shore, especially between Point Lay and Point Hope.

Northeast of Cape Lisburne and Icy Cape, the lag gravels cover the sea floor landward of the ACC. Large-scale sandwave fields have been identified directly off Icy Cape, where the current impinges against the coast north of Wainwright (Phillips, 1987).

Benthic feeding traces of both gray whales and walrus have been identified in the northeast Chukchi Sea. Gray whale feeding traces (evidence) are identified within the area dominated by the Alaska Coastal Current, from at least south of Icy Cape to north of Point Franklin. The greatest sea floor disturbance by gray whales is between depths of 23 to 34 meters in the inner shelf west of Wainwright. Southwest of Icy Cape, solitary and scattered feeding pits 1.0 to 3.8 meters in length and 1.0 to 2.5 meters in width have been observed on sonographs. The extent of gray whale feeding in this area is uncertain, as the scattered pits may represent "test" feeding areas (Phillips, 1987). Walrus feeding traces are found to depths of at least 53 meters; the long, narrow, linear furrows are less than 1 meter wide and range in length from 10 to 40 meters. Principal walrus feeding traces are further offshore than areas used by gray whales.

First-year ice can build up very quickly in late winter and spring in the coastal waters along the Kasagaluk Lagoon AMSA due to the existence of a persistent polynya along the coast. Within the polynya, open water and very low air temperatures result in continuous ice formation. The polynya is formed when prevailing winter and spring winds blow to the west, moving ice away from the shorefast ice. This tends to keep the polynya open from January onward. Its average width between February and April is 1 km or less; between May and June it is wider near Cape Lisburne than near Barrow. Off Point Lay, its average width is about 75 km in June, expanding by August to over 300 km in width (Lewbel, 1984).

On the eastern side of the Chukchi polynya, the fast ice typically extends from shore outward as far as the 20-meter contour. Floes may periodically jam into the fast ice along the coast.

### 3.2.3 Natural Hazards

Hazards faced by development activities and coastal communities and facilities are similar to those of many other shallow Arctic continental shelf areas. Geological hazards such as migrating sand waves on the sea floor and gas-charged sediments may be expected. Ridding of sea ice and movement of ice islands and other multi-year ice could pose hazards to ships, drilling platforms, and subsea pipelines. Storm-induced wave action could threaten coastal facilities and subsea pipelines. Coastal retreat, caused mostly by storm surge erosion, may further threaten shore-based facilities. Seismic and volcanic activity are probably unlikely to occur in the region (Minerals Management Service, 1984).

## 3.3 HUMAN RESOURCES

### 3.3.1 Community Setting: Point Lay

Point Lay is located on the Chukchi Sea coast, on the eastern shoreline of Kasegaluk Lagoon. The Kokolik River flows into the lagoon immediately north of the present village site. Point Lay is 188 miles southwest of Barrow, and approximately 521 miles northwest of Fairbanks. Figure 3-1 shows the layout of the village of Point Lay.

In pre-historic and historic times, the coastal area between Cape Beaufort and Icy Cape were used by the Inupiat people, who also fished and hunted along the local river systems and inland into the foothills along the Brooks Range. Residents were spread along the coast in family groups at sites favorable for harvesting subsistence resources. With increased activities by European and American explorers, whalers and traders, some consolidation of the population occurred around Point Lay. This consolidation continued into the 1930's with the establishment of a trading post and school. The population of Point Lay went up and down in response to economic opportunities and availability of education and health and transportation services. The population dispersed to other communities, and in 1960 and 1970, Point Lay was no longer recognized as an established village by the U.S. Census. The village was re-established at the old village site on the barrier spit in 1971; some house and facilities remain at this site (including ice cellars) and are still used by Point Lay residents. Beach erosion resulted in relocation of the village to a site in the Kokolik River delta in 1977; the move was financially supported by Arctic Slope Regional Corporation. However erosion and flooding at this site resulted in a second relocation to the current site in 1981. Point Lay is still the only unincorporated village in the North Slope Borough.

### 3.3.2 Population and Employment Characteristics

The North Slope Borough completed a population census of Borough villages in the spring of 1989. Table 3-1 presents 1988 population characteristics for the village of Point Lay. The 1988 population was 158, 83.2% of whom were Inupiat. Males outnumbered females, 55.7% to 44.3%. The population was relatively young, with an average age of 25.5 and 55.1% of the population 25 or younger. Between 1980 and 1988, the population nearly doubled (73.6% increase) from 91 to 158.

There were 46 households in Point Lay in 1988; average household size was 3.4 persons. The median and average household incomes were \$30,000 and \$33,603.

Tables 3-2 and 3-3 show occupation and industry composition of employment in Point Lay. Total employment in the village more than doubled, from 26 to 64, between 1980 and 1988. An increase in employment by the North Slope Borough government accounts for much of the total increase in employment. In 1988, the Borough accounted for 75% of employment within the community, including school district employment. Native corporation and their affiliates accounted for 17% of total employment, or roughly half of private sector employment. During this period unemployment has fallen from 40% to 3%. However, underemployment- persons that worked part of the year but would have worked more if jobs had been available- is still relatively high at 20% of the workforce.

North Slope Borough projections for future growth in population and employment make the following assumptions:

- an annual growth rate of 1% for the village population
- village labor force changes would follow natural shifts in the age distribution of village population
- unemployment will stay at 5% of the labor force
- the ratio of North Slope Borough government to total village employment will stay the same

These assumptions would result in projected 1994 population of Point Lay of 168, and total employment of 74.

# PT. LAY, ALASKA

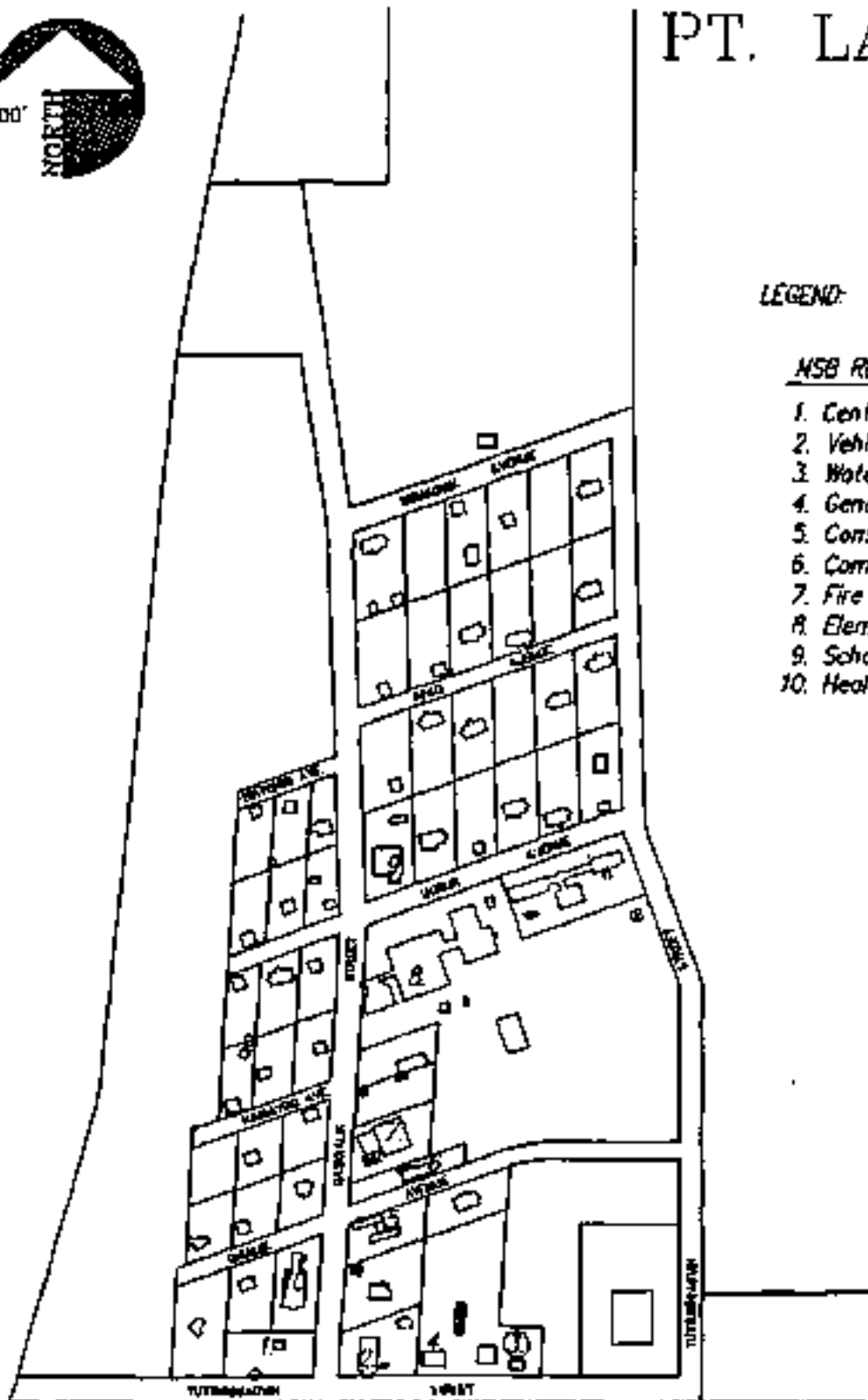
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## LEGEND:

### MSB REAL PROPERTY

1. Central Dial Office
2. Vehicle Maint./Warm Storage
3. Water Treatment Facility
4. Generator Plant
5. Construction Camp
6. Community Center
7. Fire Station
8. Elementary & High School Comple
9. School Play Structure
10. Health Clinic



MSB Planning Dept.  
Geographic Information Sys  
June 1980

Figure 3-1 Point Lay

TABLE 3 1

AGE, SEX, AND RACE COMPOSITION OF POPULATION  
POINT LAY

	INUPAT			NON-INUPAT			TOTAL			% TOTAL
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	
UNDER 4	11	8	19				11	8	19	12.8%
4 - 8	9	8	17	1	1	2	10	9	19	12.8%
9 - 15	6	8	14	0	2	2	6	10	16	10.7%
16 - 17	5	1	6				5	1	6	4.8%
18 - 25	13	8	21	1	0	1	14	8	22	14.8%
26 - 39	8	10	18	6	3	9	14	13	27	18.1%
40 - 59	14	9	23	5	6	11	19	15	34	22.8%
60 - 65	1	0	1				1	0	1	0.7%
66 +	3	2	5				3	2	5	3.4%
TOTAL	70	54	124	17	12	29	87	66	153	100.0%
%	47.0%	35.2%	52.2%	8.7%	8.1%	16.8%	55.7%	44.3%	100.0%	

NUMBER OF MISSING OBSERVATIONS

TOTAL POPULATION

AVERAGE AGE  
(years)

ENTIRE POPULATION 25.6

MALE 26.2

FEMALE 24.8

INUPAT 21.5

NON-INUPAT 28.7

Source: NSB Census of Population and Economy, 1989.



**TABLE 3-2**  
**OCCUPATION COMPOSITION OF EMPLOYMENT**  
**POINT LAY**

<u>OCCUPATION GROUPS</u>	<u>NON-</u>		<u>TOTAL</u>	<u>%</u> <u>TOTAL</u>
	<u>INS/PAT</u>	<u>INS/PAT</u>		
EXEC. ADMIN. MGR.	7	3	10	15.4%
PROFESSIONAL	0	0	0	0.0%
TEACHER	1	4	5	7.7%
TEACHER AIDE	0	1	1	1.5%
TECHNICIAN	4	0	4	6.2%
ADMIN. SUPPORT	5	2	7	10.8%
SERVICE	10	4	14	21.5%
OPERATOR/MECHANIC	11	1	12	18.5%
PILOT	0	0	0	0.0%
LABORER	5	1	6	9.2%
CRAFTSMAN	3	0	3	4.6%
ARTISAN	1	0	1	1.5%
ARMED FORCES	0	0	0	0.0%
TRAPPER/HUNTER	1	0	1	1.5%
OTHER	1	0	1	1.5%
<b>TOTAL EMPLOYED</b>	<b>49</b>	<b>16</b>	<b>65</b>	<b>100.0%</b>
<b>% OF TOTAL</b>	<b>75.4%</b>	<b>24.6%</b>	<b>100.0%</b>	
<b>LABOR FORCE</b>	<b>51</b>	<b>16</b>	<b>67</b>	
<b>% OF TOTAL</b>	<b>76.1%</b>	<b>23.9%</b>	<b>100.0%</b>	
<b>TOTAL UNEMPLOYED</b>	<b>2</b>	<b>0</b>	<b>2</b>	
<b>UNEMPLOYMENT RATE</b>	<b>3.9%</b>	<b>0.0%</b>	<b>3.0%</b>	
<b>TOTAL UNDER-EMPLOYED</b>	<b>9</b>	<b>4</b>	<b>13</b>	
<b>UNDER-EMPLOYMENT RATE</b>	<b>17.5%</b>	<b>25.0%</b>	<b>19.4%</b>	

**Notes:**

- (1) Total employed includes part-time, temporary, as well as full-time employment.
- (2) The occupation category "OTHER" includes underemployed persons otherwise not accounted for. Underemployment refers to persons that were unemployed because they could not find a job during part of the year.
- (3) Unemployed refers to persons out of work because they could not find a job for the entire twelve-month period.
- (4) Labor force = employed + underemployed + unemployed.
- (5) Unemployment rate = persons unemployed divided by the labor force.

Source: NSB Census of Population and Economy, 1989.

INDUSTRY COMPOSITION OF EMPLOYMENT  
POINT LAY

INDUSTRY GROUP	NON-		TOTAL	% TOTAL
	FARMAT	INFARMAT		
PRIVATE SECTOR				
FISHERIES	0	0	0	
MINING	0	0	0	
CONSTRUCTION	0	1	1	
TRANSP/COMM/PUBLIC UTIL	0	0	0	
TRADE	1	0	1	
FINANCE/INSUR/REAL EST	0	0	0	
BUSINESS/REPAIR SERV	0	0	0	
ENTERTAIN/REC/TOURIST SER	0	0	0	
HEALTH, SOCIAL, & EDUC SER	0	0	0	
SELF-EMPLOYED	1	0	1	
NATIVE CORP & AFFILIATE	10	1	11	
OTHER	1	1	2	
SUBTOTAL	13	3	16	25.0%
NSB GOVERNMENT				
HEALTH	7	0	7	
PUBLIC SAFETY	0	2	2	
MUNICIPAL SERV	12	2	14	
FIRE DEPT	0	0	0	
SEARCH & RESCUE	0	0	0	
HOUSING	2	0	2	
WILDLIFE MGT	1	0	1	
REL & MIP	7	0	7	
LAW OFFICE	0	0	0	
ADMIN & FINANCE	0	0	0	
PLANNING	0	0	0	
INDUSTRIAL DEVELOPMENT	0	0	0	
HIGHER EDUCATION CENTER	0	0	0	
MAYORS OFFICE & ASSEMBLY	1	1	2	
OTHER NSB	0	0	0	
SUBTOTAL	30	3	33	54.7%
NSB SCHOOL DISTRICT	4	8	12	19.8%
NSB SUBTOTAL	34	11	45	73.4%
OTHER LOCAL GOVT	0	0	0	0.0%
STATE GOVT	0	0	0	0.0%
FEDERAL GOVT	1	0	1	1.6%
ARMED FORCES	0	0	0	0.0%
SUBTOTAL ALL GOVT	35	11	46	75.0%
GRAND TOTAL	48	18	66	100.0%
% OF TOTAL	73.0%	27.0%	100.0%	

Notes:

(1) Figures equal to number of persons employed, including part-time, temporary, and full-time employment.

Source: NSB Census of Population and Economy, 1980.

### 3.3.3 Community Facilities

Community facilities are shown on Figure 3-1.

#### Utilities

The North Slope Borough's Department of Public utilities is responsible for the operation of the major utilities, which include an electric power generation and distribution system, water services, sewage collection services, and solid waste disposal services.

#### Schools and Public Buildings

Several public buildings have been completed during recent years as part of the Borough Capital Improvement Programs. A community building was completed in 1983, and includes the offices of Cully Corporation and the Borough's village coordinator. A new Department of Public Works shop facility was completed within the last year, and major improvements to the school have been completed within the last few years.

#### Transportation

The community's airport, actually part of the DEW line site, is gravel strip 100 feet wide by 3519 feet long. It is maintained by DEW line personnel, but is open to use by commercial air carriers and the residents of Point Lay on a permit basis. Commercial service is provided several times a week by Cape Smythe.

The road system within the townsite is the other major transportation system in Point Lay. It is maintained by the North Slope Borough Public Works Department.

Boats, ATV's and snow machines are used for transportation throughout the AMSA. Boats are used during the open water period for subsistence activities, travel to hunting and fishing camps, and occasionally to Wainwright. Three and four wheelers are used on the barrier islands and on riverbanks during the summer months. Snowmachines are the most important means of transportation during the winter, both out on the sea ice and for travelling inland.

### 3.3.4 Land Use and Ownership

#### Land Use

Within the Kasegaluk Lagoon AMSA, categories of land use include subsistence and other traditional uses; resource development, such as gravel extraction, development of coal

resources and exploration for oil and gas; military uses such as Distant Early Warning (DEW) line sites; and uses located within the village of Point Lay, including residential, commercial, public utilities and services, and transportation uses.

**Subsistence and Traditional Uses.** Subsistence and other traditional land uses occur throughout the AMSA: they include fixed sites, such as fishing and hunting camps; areas of predictable use, such as fish streams or passes in Kasegaluk Lagoon; or often move in response to the location of the resource being harvested. Maps 3-9 through 3-24 provide information of subsistence use areas. These uses and areas used are described in more detail in Section 3.3.5. Traditional Land Use Sites identified by the North Slope Borough are shown in Table 3-4.

**Resource Development.** Existing Resource development uses are currently limited to the coal project being developed by Arctic Slope Regional Corporation (see Figure 3-2). Use of this coal is considered as an alternative to use of fuel oil in communities, military installations, and industries along the northern and western coasts of Alaska. Located approximately 35 miles southwest of Point Lay, the coal reserve base is estimated at slightly over 1 million tons. The coal is bituminous and of relatively high quality and high BTU (12,000) content. The method of mining would be strip mining at approximately a 4:1 ratio; over burden would be removed by a combination of ripping, drilling and blasting. A small amount of coal has been mined and transported for test burning during the last three years. Coal is mined during the summer months, stockpiled, and shipped out by airplane to selected villages in northern and northwest Alaska for testing as a source of space heating and power generation. A mining camp facility and associated airstrip is located at the mine site; development would also require a 5.4 mile haulroad. Feasibility and marketing studies are still underway; if developed in phases, production would start at 30,600 tons per year and increase to 47,590 tons per year. Employment during operation would range from 18 to 20. Depending on the potential in-state and export markets, there has been some evaluation of developing a barge loading facility at Omalik Lagoon or constructing a road connection to road and port facilities constructed for the Red Dog mine project. Full scale development of this project can produce economic benefits for the community of Point Lay. However, there are village concerns over potential negative impacts on beluga whales and other subsistence resources resulting from the location, dredging and construction of a barge loading facility.

**Gravel Extraction.** Gravel is required for nearly all construction projects in the Arctic, and relatively large amounts are required for road, port, and airport projects. Historically, some gravel extraction has occurred along rivers and in offshore areas. Residents of Point Lay contend that previous mining, on the barrier islands and in the passes between them, associated with DEW site construction accelerated erosion within Kasegaluk Lagoon. More recently, the North Slope Borough dredged gravel from offshore areas, and piped it

**Table 3-4**  
**KASEGALUK LAGOON CANDIDATE AMSA TRADITIONAL LAND USE SITES**

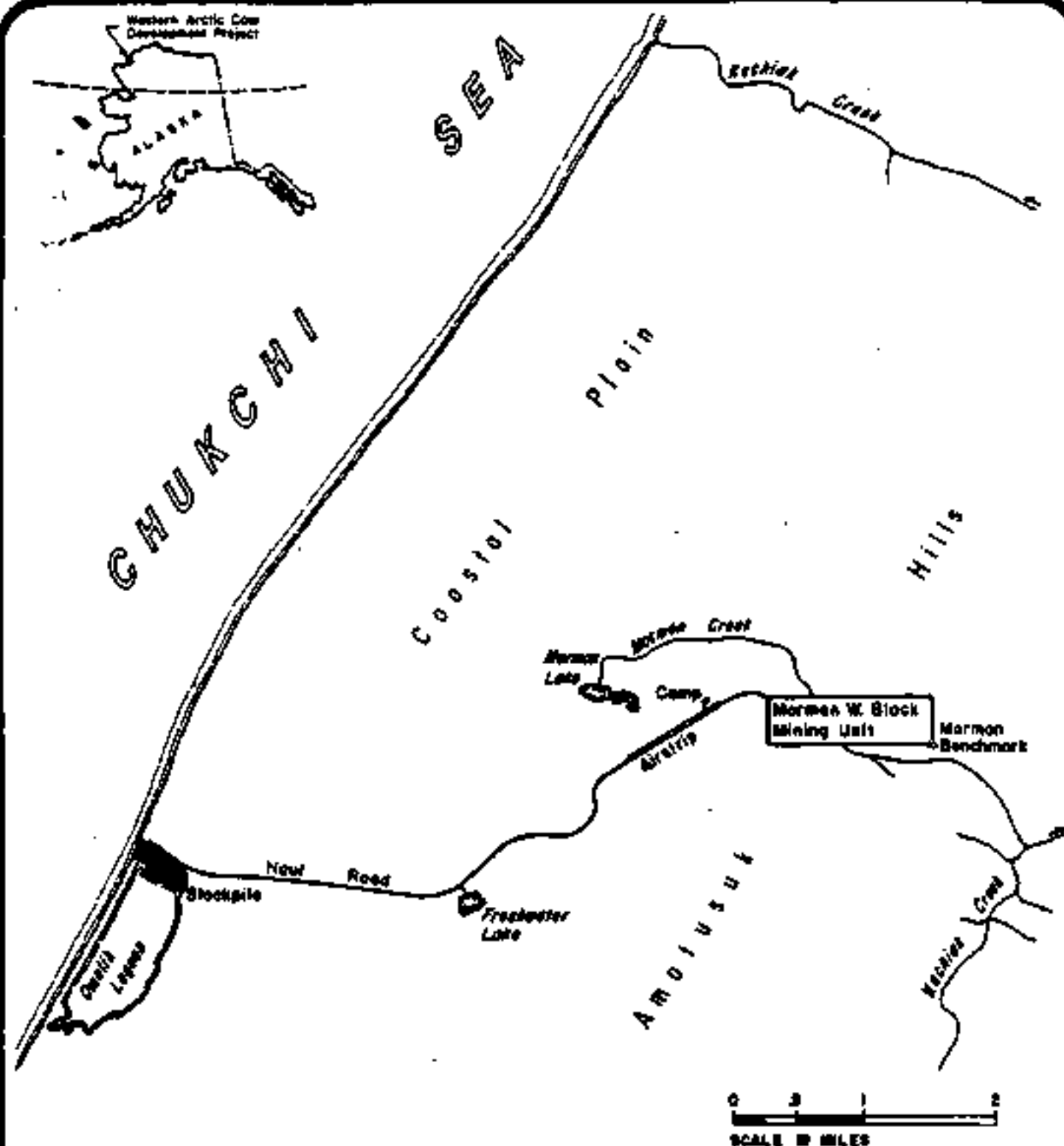
<b>SITE</b>	<b>FEATURES</b>	<b>COMMENTS</b>
PL6, Kuuchiek	Cabin in use. Graves. Ruins/bones, sod houses.	Hunting area for caribou and bear. Trapping area for wolverine, wolves, and foxes. Nesting area for Ahaliks, Eider ducks, and Arctic Tern.
PL7, Tachim Isua	Ruins/bones, sod houses.	Trapping area for wolves, wolverine, and foxes. Hunting area for brown bears, polar bears, caribou, ugruk, beluga, snow geese, and Eider ducks. Reindeer herding area in the 1930's.
PL8, Kuchaurak	Ruins/bones, sod houses.	Hunting and trapping area.
PL9, Paunnagvik		Berry picking area.
PL10, Kasigialik	Ruins/bones, sod houses. Graves.	Fishing and trapping area. Hunting area for spotted seals.
PL11, Sinigrak	Cabin in use. Grave.	Hunting and trapping area.
PL12, Aliginak		Reindeer herding area. Local coal source.
PL13, Kapkagisak	Ruins.	Hunting and trapping area.
PL14, Kikittak	Ruins of three sod houses.	
PL15, Kukpauruk Paana	Ruins.	Fishing area. Trapping area for wolverine, wolves, and fox. Hunting area for black bear, polar bear, caribou, and ducks.

<b>SITE</b>	<b>FEATURES</b>	<b>COMMENTS</b>
PL16, Kippisakook	Ruins.	
PL17, Sinimurak	Point of land.	Fishing, hunting, and trapping area.
PL18, Kayukualuk	Ruins of sod house. DEW line site.	Hunting area for ptarmigan and squirrel.
PL19, Reindeer Corral	Ruins of lumber and wire corral.	Used in the 1930's.
PL20, Ququlik Paa	Ruins.	Hunting and trapping area. Occupied in 1912.
PL21, Imiagnik	Ruins.	Hunting area for seal, ugruk, and polar bears.
PL22, Sisuaaaagvik		Hunting area for polar bears and foxes, ducks.
PL23, Napagtaachiaq	Ruins.	Hunting area for polar bears, ugruks, seals, and belugas.
PL24, Tuungaich	Ruins/bones, sod houses.	Hunting area for polar bear and caribou.
PL25, Kuugachiagruak		Trapping area for fox. Hunting area for caribou and ducks.
PL26, Niklavik		Trapping area for wolverine and fox. Hunting area for caribou.
PL27, Kuugarak	Whaling settlement.	Hunting area for caribou and geese.
PL28, Issunnaktuuq	Whaling settlement.	Hunting area for caribou and geese.
PL29, Kanaktuuq	Whaling settlement.	Hunting area for caribou and geese.
WAI84, Avgumman		Hunting and camping area.


SITE	FEATURES	COMMENTS
WA185, Avugmagagruk		Hunting and camping area.
WA186, Milliktagvik, XWA1006	Ruins of nine sod houses, 7 caches. One sod house and one cabin in use.	Whaling settlement abandoned in 1930's.
WA187, Nullagvik	One cabin in use.	Hunting and camping area. Local coal source.
WA190, Pinugsragruk Pass	Inlet.	
WA191, Akinnaq, XWA1019	Two sod houses, one grave.	
WA192, Mitqutailat		Hunting area for spotted seals and Arctic Terns. Camping area.
WA193, Nuqulik Pt., XWA1022	Two frame houses in use. Ruins of sod house.	Hunting/camping area.
WA194, Atigulitugvik	Two or three sod house ruins.	Hunting/camping area.
WA195, Akulliaqattat, XWA1021	Possible midden area.	Hunting area for spotted seals and bird eggs. Camping area.
WA196, Auksaqulak	Ruins of old village.	Whale hunting area.
WA197, Mitqutailat		
WA198, Singaqpak	Inlet.	Hunting area for spotted seals and beluga whales.
WA199, Nivaat, XWA1025	Several sod houses, cabin, ice cellar. One frame house in use.	
WA100, Piiala	Grave. Ruins.	Egg gathering area.

<b>SITE</b>	<b>FEATURES</b>	<b>COMMENTS</b>
WAI101, Uluaqlugvlich	One frame house in use.	Egg gathering area.
WAI102, Plutchaat		Duck hunting area and egg gathering area.
WAI103, Avvaq, (Klugruak), XWAI026	Ruins of more than ten sod houses.	Hunting area for spotted seals and brants.
WAI105, Qayaigsigvik, (Icy Cape), XWAI007	Ruins of sod houses, graves. One sod house in use. Cellars. One frame house (in use?)	Most of site is now apparently under water. Polar bear and caribou hunting area. Village was occupied about 1906-1940's. During late 1800's a second village at the mouth of the Utukok River had the same name.
WAI106, Aqiegugnat, XWAI020	Ruins of 13-17 sod houses, 5 caches. One cabin in use.	Trapping, hunting, and camping area. Larson and Bodfish excavated in 1942, but did not report.
WAI107, Umiagnualik	Ruins, cellars.	Kunilaat grounds.
WAI109, Sullivik Islands	Ruins of sod houses.	Hunting/camping area. One sod house dug by Larson and Bodfish.
WAI110, Utuqqagmiut	Ruins of sod house.	Fishing area.
WAI111, Agmaalik	Place name.	Name means flint stone.
WAI113, Tulaaglaq, XWAI018	Ruins of several sod houses.	Camping area. Two sod houses have been excavated.
WAI114, Tulaagiuraq		Camping area.





# Deadfall Syncline Project Site Plan

	<b>WESTERN ARCTIC COAL DEVELOPMENT PROJECT</b>	
	<b>DEADFALL SYNCLINE PROJECT SITE PLAN</b>	
Prepared by arctic slope consulting	Date JAN. 1966	sheet 2 of 2

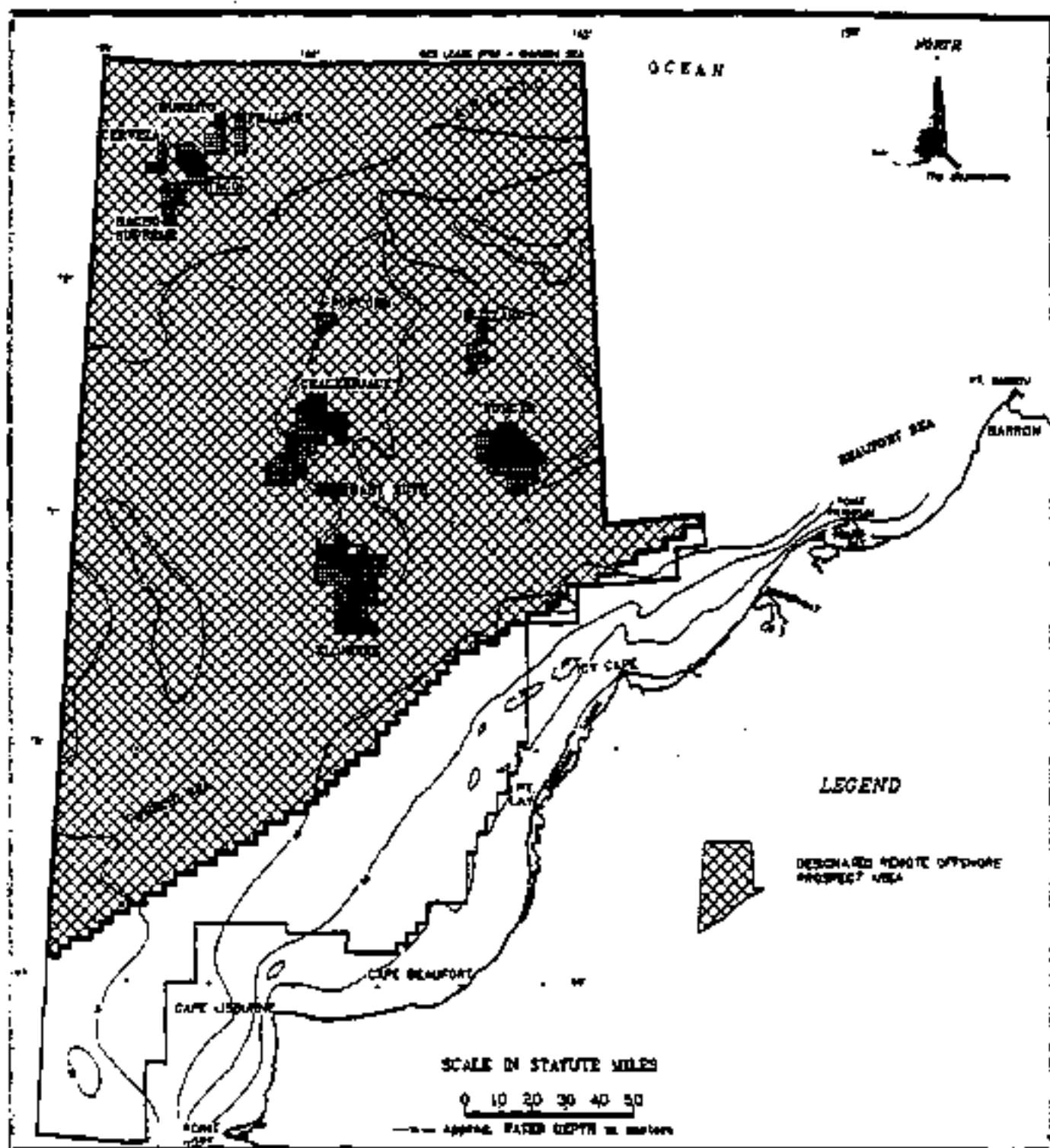
onshore in a slurry form. Depending on their development feasibility, both coal and offshore oil and gas projects could require large amounts of gravel.

**Oil and Gas Exploration and Development.** The federal Chukchi Sea OCS oil and gas Lease Sale 109 was held in 1987. Shell Western Exploration and Pipeline Inc. is scheduled to commence exploration activities on their tracts approximately 75 miles northwest of Point Lay in the summer of 1989 (see Figure 3-3). Shell intends to use the drill ship Cammar Explorer III for their program, which is nearly 500 feet in length and can accommodate up to 103 people. Three Canadian support vessels will be assigned to the operation, primarily for ice management and anchor handling. A barge and tug will also be on location to provide oil spill response capabilities. With one drilling vessel, exploration will most likely be limited to one or two wells per season. Actual drilling will occur from the months of June through November, hinging on weather and ice conditions. Exploration activities could continue over the next four years, depending on the results of this years program.

Exploration activities are scheduled to receive air support from Barrow and marine support from Kotzebue. There are no current plans to provide any support from Point Lay or any areas within the AMSA, except in the case of emergencies. Future exploration plans may involve tracts closer to Point Lay and the AMSA. Depending on future exploration federal offshore oil and gas leases, and whether economic reserves of oil or gas are discovered, some additional use associated with support of resource development could occur within the AMSA. Positive impacts from the proposed exploration would result from employment on the project; Shell proposes to hire a minimum of 4 residents from each of four Chukchi coast villages, including Point Lay. However, Point Lay residents have raised concerns regarding the potential negative impact of oil and gas activities on marine mammals and the subsistence harvest of those resources. Impacts mentioned include mammal avoidance or displacement from noise and human activity, and affects of an oil spill or other accident.

**Military.** Military uses are associated DEW line sites at Point Lay and Icy Cape. These sites are relatively small in nature and include electronic equipment, support facilities and associated transportation facilities.

**Village Townsite Land Use.** These uses include residential, commercial, and public utilities and community services, most of which take place within the boundaries of the village townsite. The last detailed study of land use in Point Lay was conducted in 1983. At that time, 42.5 % of the townsite's developed 31.1 acres was occupied by residential use, 34.2 % was taken up by public roads, public facilities occupied 10.6 %, utilities and storage facilities accounted for another 10.6 %, and 2.2 % was in commercial use. Vacant land accounted for 39 acres. Current land use characteristics are similar, with some increase likely in residential, public facility and utility uses resulting from Borough CIP projects.



### Ownership and Management

**Ownership.** Land ownership status is shown on Map 2-1 in the AMSA Boundary Chapter. Within the AMSA boundary are lands owned by the Federal government (U.S. Fish and Wildlife Service, Department of Defense, and Bureau of Land Management), State of Alaska, Cully Corporation and Arctic Slope Regional Corporation.

**Land Management.** Land within the Kasegaluk Lagoon AMSA is subject to several land use plans and controls. The entire AMSA lies within the North Slope Borough Coastal Management Program boundaries. Certain types activities that need federal, state, and Borough permits and approvals are required to be consistent with the policies of the Borough's coastal management program. Consistency with the coastal management program is determined through a formal permit review process.

Activities on Borough, state, and private land are subject to the North Slope Borough's Land Management Regulations (LMR's), under Title 19 of the Borough Code. The LMR's establish zoning districts for the Borough, and depending on the nature of the zone and particular activity involved, require permits and compliance with LMR policies.

The State of Alaska's Northwest Area Plan, prepared by the Department of Natural Resources (with input from the Borough, other state agencies, and Native corporations) provides guidelines for uses of and activities on state lands within the AMSA. This includes activities which require a state permit or approval, and actions initiated by the state itself, such as land and other resource disposals or reclassification of state lands. The AMSA falls within Management Unit 1 - Lisburne of the Area Plan. State lands within the unit will remain open to new mineral entry and leasing for oil and gas. The waters of Kasegaluk Lagoon were identified in this plan as a Special Value Habitat and/or Harvest Area. Lisburne Unit lands have been designated on the basis of primary use. These designations and associated state lands classification (in parentheses) are listed below:

- 1a - habitat and harvest tidelands (Wildlife Habitat Land)
- 1b - general use uplands (Resource Management Land)
- 1c - coal/habitat and harvest uplands (Mineral Land, Wildlife Habitat Land)
- 1d - general use tidelands (Resource Management Land)
- 1e - habitat and harvest uplands (Wildlife Habitat Land)

Some of the federal lands in AMSA come under the jurisdictions of the Alaska Marine National Wildlife Refuge's Comprehensive Conservation Plan. These include the several of the barrier islands on Kasegaluk Lagoon to the east of Icy Cape, and some to the south of Icy Cape. The preferred management alternative for the area would maintain the current use and management conditions: maintain the existing mix of undeveloped habitat and commercial and developed military use sites; protect seabird colonies and marine mammal

haulout areas; protect existing fish and wildlife populations and habitats; provide for continued subsistence use of refuge resources and maintenance of traditional access opportunities; and recommend no additional areas for wilderness designation.

Both the Arctic Slope Regional Corporation and Cully Corporation, the ANCSA village corporation for Point Lay, have guidelines and permit requirements pertaining to use of their lands.

### 3.3.5 Subsistence

Subsistence is the customary and traditional use of natural resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handicraft articles; and for barter or sharing among subsistence users. For residents of much of rural Alaska, including the study area, subsistence is the predominant way of life, and a continuation of a traditional way of life. It defines personal identity, how people relate to each other, and how they relate to the surrounding environment. Because wage employment and sources of cash in rural communities are limited, and processed food is available but expensive, subsistence is a major component of the economy, putting food on the table and providing fuel, building material, and clothing. Subsistence harvests provide the bulk of the Inupiat Eskimo diet.

**Subsistence Resources.** Table 3-5 presents a list of subsistence resources used by residents of Point Lay. A variety of marine and terrestrial resources are utilized.

**Harvest Patterns.** Figure 3-4 presents the seasonal round of subsistence activities for the village of Point Lay. In general, the pattern and timing of the harvest relates to the seasonal distribution and abundance of resources in the area. Some resources, such as caribou and waterfowl, are harvested during two peak cycles. Most other are harvested during one general period, and a few, such as ptarmigan, are harvested throughout the year.

**Subsistence Use Areas.** The area used by Point Lay residents in pursuit of subsistence activities is quite large, although it falls within the middle range of subsistence use areas for North Slope Borough communities. Recent studies by the Alaska Department of Fish and Game (ADF&G 1985) estimate that the minimum community use area covers roughly 11,000 square miles; 7500 square miles for terrestrial resources and 3500 square miles for resources in nearshore waters and the marine environment. Terrestrial subsistence resources require the greatest amount of area, with caribou and furbearer hunting/trapping estimated at 8,000 square miles apiece. Birds and waterfowl required nearly 5,000 square miles, followed by seal at 2,500 square miles. Maps 9 through 24 at the back of this section show areas used for the harvest of different species.

Table 3-5 SPECIES HARVESTED, BY RESOURCE CATEGORY, IN POINT LAY.

Resource Category	Species
Caribou	Caribou
Vegetation	Blueberry Cloudberry (grass roots) (sourdock) wild Celery wild Potato Willow leaves Hudson's Bay Tea
Furbearers	Arctic Fox Red Fox Wolf Wolverine
Whale	Belukha (Bowhead)
Invertebrates	Clams (unidentified) Tanner Crab Shrimp (unidentified)
Wildfowl	Pacific Black Brant Canada Goose White-fronted Goose Snow Goose Common Eider King Eider Spectacled Eider Stellar's Eider Oldsquaw Pintail Snowy Owl Willow Ptarmigan Bird's eggs
Brown bear	Brown bear
Fuel and Structural Material	Coal Driftwood Willows
Small Mammals	Arctic Ground Squirrel Arctic Marmot
Walrus	Walrus
Seals	Bearded Seal

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**Resource Category**

---

**Species**

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**Polar Bear****Ringed Seal  
Spotted/Harbor Seal****Polar Bear****Fish****Arctic Char  
Arctic Cisco  
Arctic Flounder  
Arctic Grayling  
Bering Cisco ?  
Chum Salmon  
Capelin/Saelt ?  
Pacific Herring  
Pink Salmon**

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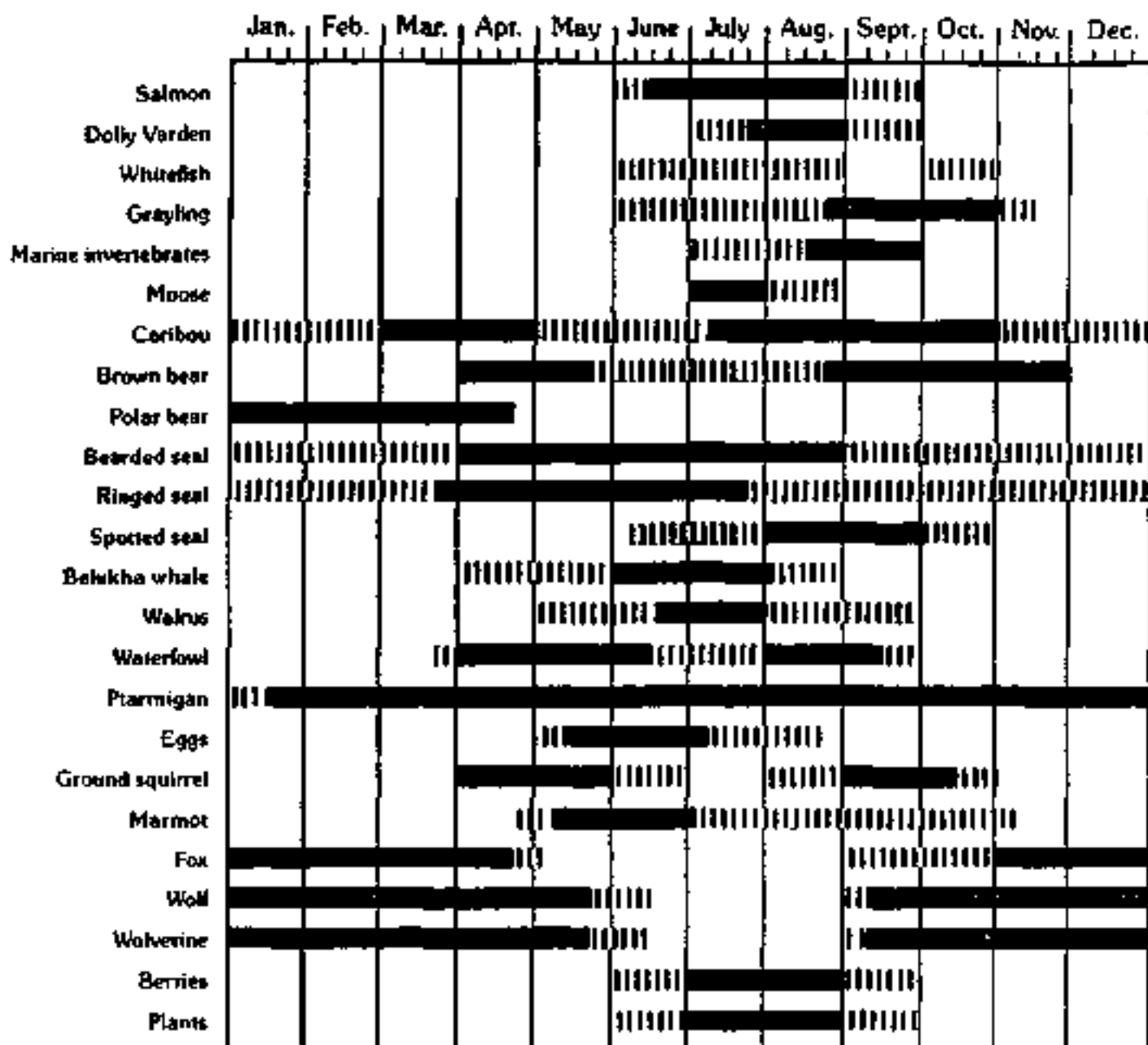


Figure 3-4 Annual round of harvest activities by Point Lay residents, ca. 1980's. Solid line indicates time when harvest usually takes place. Broken line indicates occasional harvest effort (Schneider M.d.).



**Harvest Methods and Access to Resources.** Unlike the harvest of many other subsistence resources, the harvest of beluga whale is a community effort. Hunting effort is concentrated in the passes between the barrier islands, and villagers use as many boats as are available to drive the whales into the shallow waters of the lagoon, where they are shot with rifles. Whales are then retrieved, dressed out, and put in ice cellars. Other marine mammals, caribou, and some furbearers are also hunted with rifles; shotguns are used for other furbearers and waterfowl. Fishing in the waters of the lagoon is done with gillnets set out along the shore of the barrier islands. During the fall fishing occurs upriver, using rod and reel, and nets under the ice.

Access to subsistence resources and use areas depends on the season. During the open water months, small boats with outboard motors are used extensively throughout Kasegaluk Lagoon, for fishing, marine mammal hunting, and access to some waterfowl and caribou hunting areas. Boats are also used to get to fish camps up the rivers within the AMSA. Three and four wheelers are used on the barrier islands and on riverbanks during the summer months. Snowmachines are the most important means of access during the winter, both out on the sea ice and for travelling inland.

**Harvest and Distribution.** Information on amounts of resources harvested emphasizes the importance of beluga whale to Point Lay. Beluga accounted for 60 percent of the total pounds of subsistence foods harvested. Caribou were the next most important resource, accounting for 17 percent of the total pounds harvested. It is possible that caribou normally contribute a higher percentage to the subsistence harvest; during the year that data was collected (1987), residents felt that caribou were not abundant as in previous years. Other marine mammals followed with 14 percent of the harvest. Compared to other North Slope communities, fish harvests appear to be of lesser importance (2.5 percent), and were half of the contribution of waterfowl by weight (5 percent). The total per capita subsistence harvest of Point Lay residents was 819 pounds in 1987. This figure is high compared to other North Slope Borough communities, and again emphasizes the importance of subsistence resources to the people of Point Lay; 86 % of the village households reported that half or more of the game, fish, bird, and plant resource consumed were harvested locally. Of the households surveyed by ADF&G, 82% owned or shared an ice cellar for storage of subsistence harvests. Many of these cellars are located at the old village site on the barrier island.

### **3.3.6 Political and Institutional Structure**

There are two major institutions that play an important role in making decisions that affect the village of Point Lay. The Point Lay IRA government was incorporated under federal law and has certain tribal government powers and authorities. It is the village political body that deals with the borough, state and federal government. Membership includes all adult

Native residents of Point Lay, and an elected council runs the IRA government. For the purposes of coastal management and other borough activities, the North Slope Borough coordinates with the traditional IRA council.

Cully Corporation is the for-profit Native village created by the ANCSA of 1971. It has been very active in the village economy since forming a construction arm in the early 1980's. In addition to this role, the corporation also manages and can dispose of surface lands that it is entitled to under the provisions of ANCSA.



SUBSISTENCE LAND USE - POINT LAY VILLAGE  
VEGETATION GATHERING



1. 凡在本行開辦之各項業務，均應遵守本行所定之各項規章，並應隨時注意本行所定之各項規章，如有違反者，本行將依法究辦。

1. What is the main purpose of the document?  
 2. What are the key findings of the study?  
 3. What are the implications of the findings?  
 4. What are the limitations of the study?  
 5. What are the conclusions of the study?

But more collected in their speech, manner and tone, all completely courteous and, indeed, thoughtful when one or two names were mentioned, they are, as a group, a fine lot. In the community they are, I think, the best.

[illegible][illegible][illegible][illegible]

# SUBSISTENCE LAND USE - POINT LAY VILLAGE FURBEARER TRAPPING



This map depicts areas designated for the trapping of fur-bearing animals. The areas are shown in various shades of gray, indicating different levels of trapping activity. The map also shows the location of Point Lay Village and the surrounding area.

Source: Original files compiled by Alaska Department of Fish and Game, Division of Wildlife Management, Arctic Region, North Slope Borough, Barrow, Alaska, 1968. Scale 1:100,000.

This map was compiled from various sources, including the Alaska Department of Fish and Game, Division of Wildlife Management, Arctic Region, North Slope Borough, Barrow, Alaska, 1968. The map shows the location of Point Lay Village and the surrounding area. The map also shows the location of the Point Lay Village Fur Trapping Area, which is located in the Point Lay Village area. The map also shows the location of the Point Lay Village Fur Trapping Area, which is located in the Point Lay Village area.

Point Lay's population was 14 persons in 1950, 1955, 1960, and 1965. The population was estimated by census in 1950, 1955, 1960, and 1965.

Community development maps were compiled by the Alaska Department of Fish and Game, Division of Wildlife Management, Arctic Region, North Slope Borough, Barrow, Alaska, 1968. The maps show the location of Point Lay Village and the surrounding area.

Map Projection: North Slope Borough, Alaska, 1968. The map shows the location of Point Lay Village and the surrounding area.

Map Projection: North Slope Borough, Alaska, 1968. The map shows the location of Point Lay Village and the surrounding area.

Scale: 1:100,000. The map shows the location of Point Lay Village and the surrounding area.

Legend: (Hatched) Fur Trapping

Point Lay

Barrow

Point Lay

Barrow

Point Lay

Barrow

Point Lay

Barrow

Point Lay

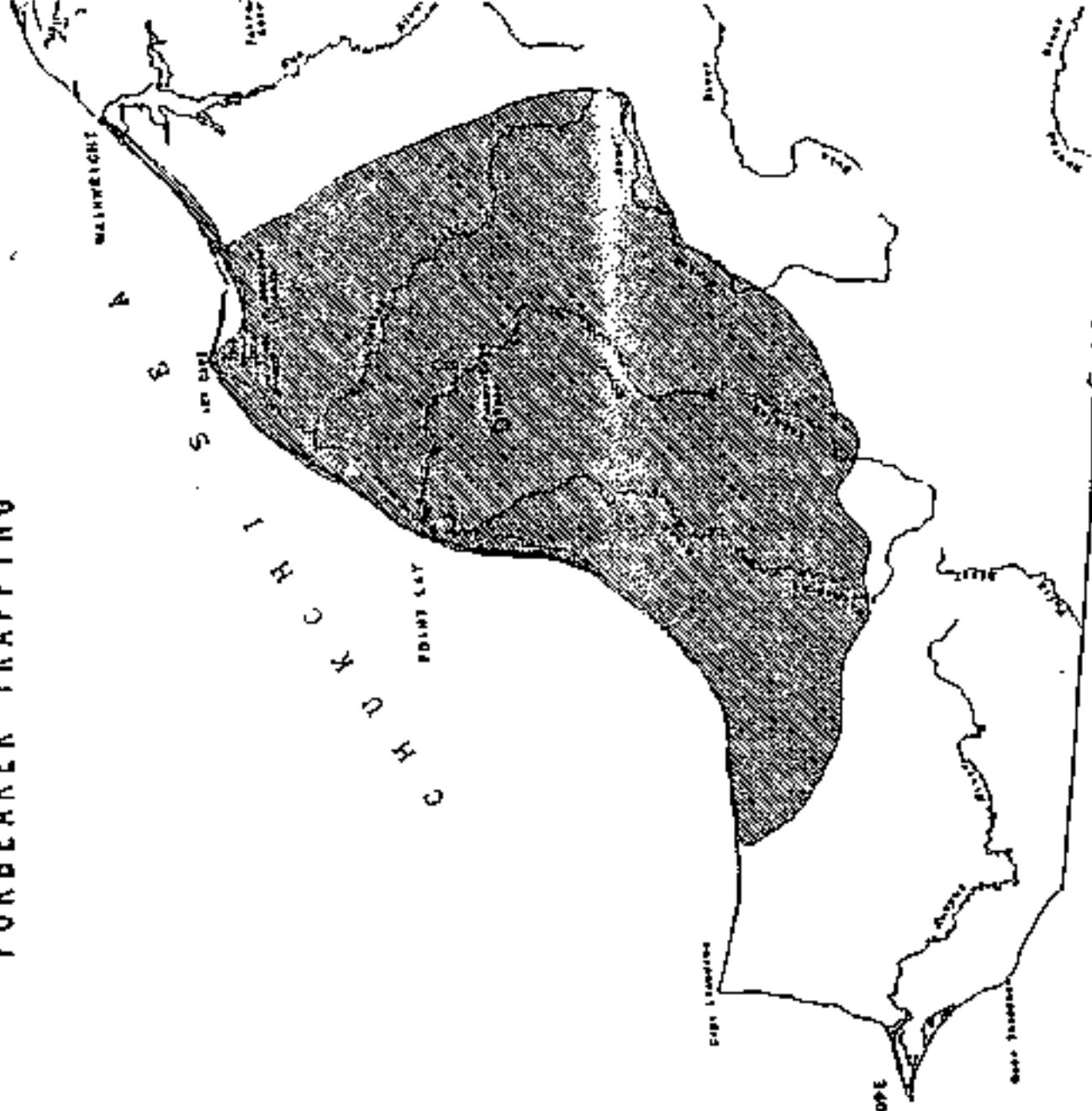
Barrow

Point Lay

Barrow

Point Lay

Barrow



# SUBSISTENCE LAND USE - POINT LAY VILLAGE WHALE HUNTING



This map displays subsistence land use of Point Lay Village, Alaska, showing the village and its surrounding area. The map is based on aerial photography and is not a true representation of the actual land use. The map is not a true representation of the actual land use. The map is not a true representation of the actual land use.

Source: Aerial photos furnished by Alaska Department of Fish and Game, Division of Subsistence, Wildlife Section, Wildlife Management Office, Fairbanks, Alaska 99701.

Base map collected through mapping of aerial photos and other sources. The map is not a true representation of the actual land use. The map is not a true representation of the actual land use. The map is not a true representation of the actual land use.

Point Lay's population was 30 persons in 1950, and 10 persons in 1955. The population was 10 persons in 1960, and 10 persons in 1965.

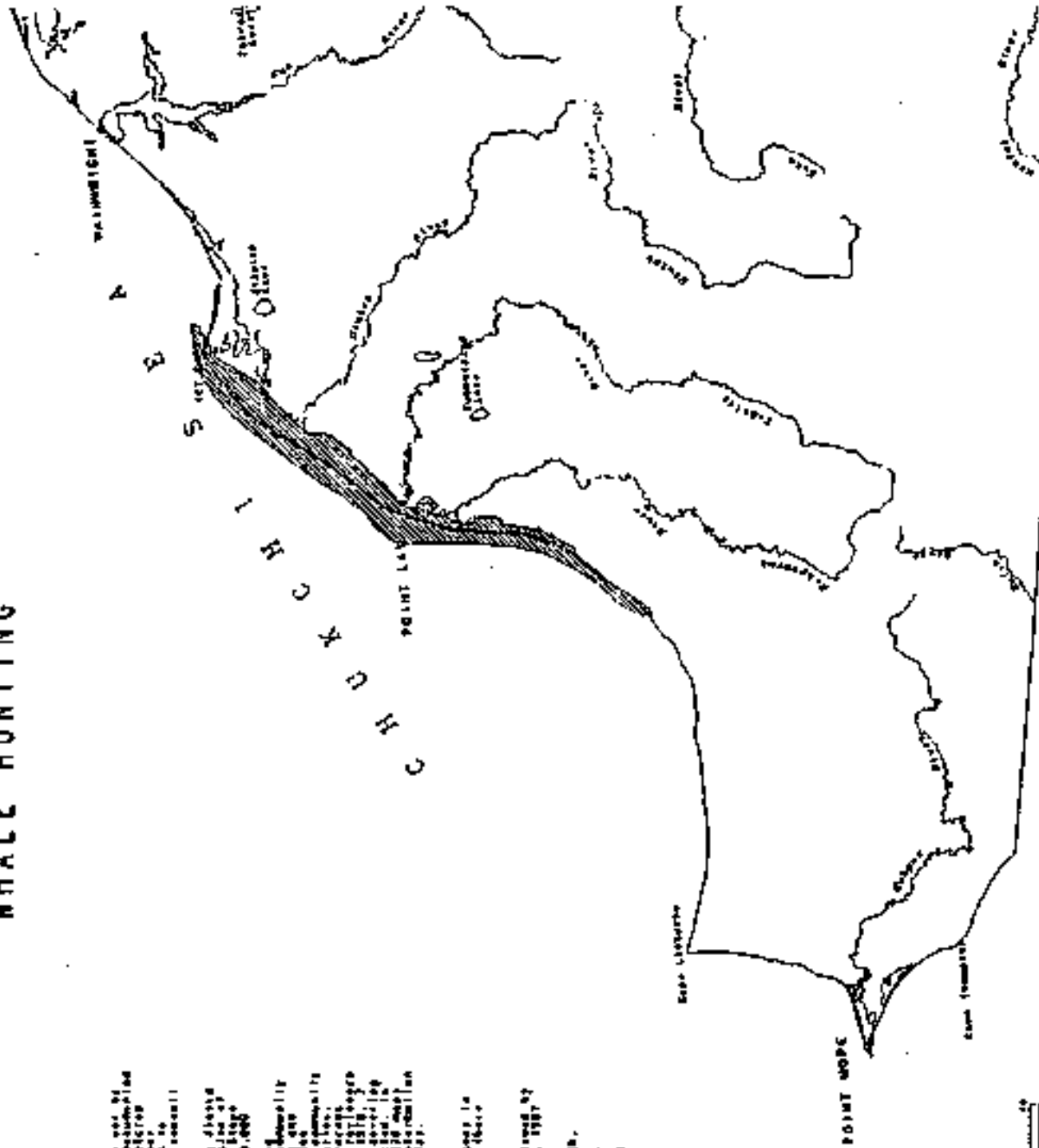
Comments: Comments were collected by the Alaska Department of Fish and Game, Division of Subsistence, Wildlife Section, Wildlife Management Office, Fairbanks, Alaska 99701.

Map Projection: North Polar Stereographic, Albers Equal Area, Alaska Albers, Alaska Albers, Alaska Albers.

Map Projection: Alaska Albers, Alaska Albers, Alaska Albers, Alaska Albers.

Date: May, 1961.

WHALE  
HUNTING



Scale: 1 inch = 10 miles

10000

# SUBSISTENCE LAND USE - POINT LAY VILLAGE INVERTEBRATES GATHERING



This map shows the subsistence land use of the Point Lay Village community. It is based on a survey conducted by the U.S. Fish and Wildlife Service in 1964. The map shows the distribution of subsistence land use for invertebrates gathering. The map is based on a survey conducted by the U.S. Fish and Wildlife Service in 1964. The map shows the distribution of subsistence land use for invertebrates gathering.

The map shows the distribution of subsistence land use for invertebrates gathering. The map is based on a survey conducted by the U.S. Fish and Wildlife Service in 1964. The map shows the distribution of subsistence land use for invertebrates gathering. The map is based on a survey conducted by the U.S. Fish and Wildlife Service in 1964. The map shows the distribution of subsistence land use for invertebrates gathering.

The map shows the distribution of subsistence land use for invertebrates gathering. The map is based on a survey conducted by the U.S. Fish and Wildlife Service in 1964. The map shows the distribution of subsistence land use for invertebrates gathering.

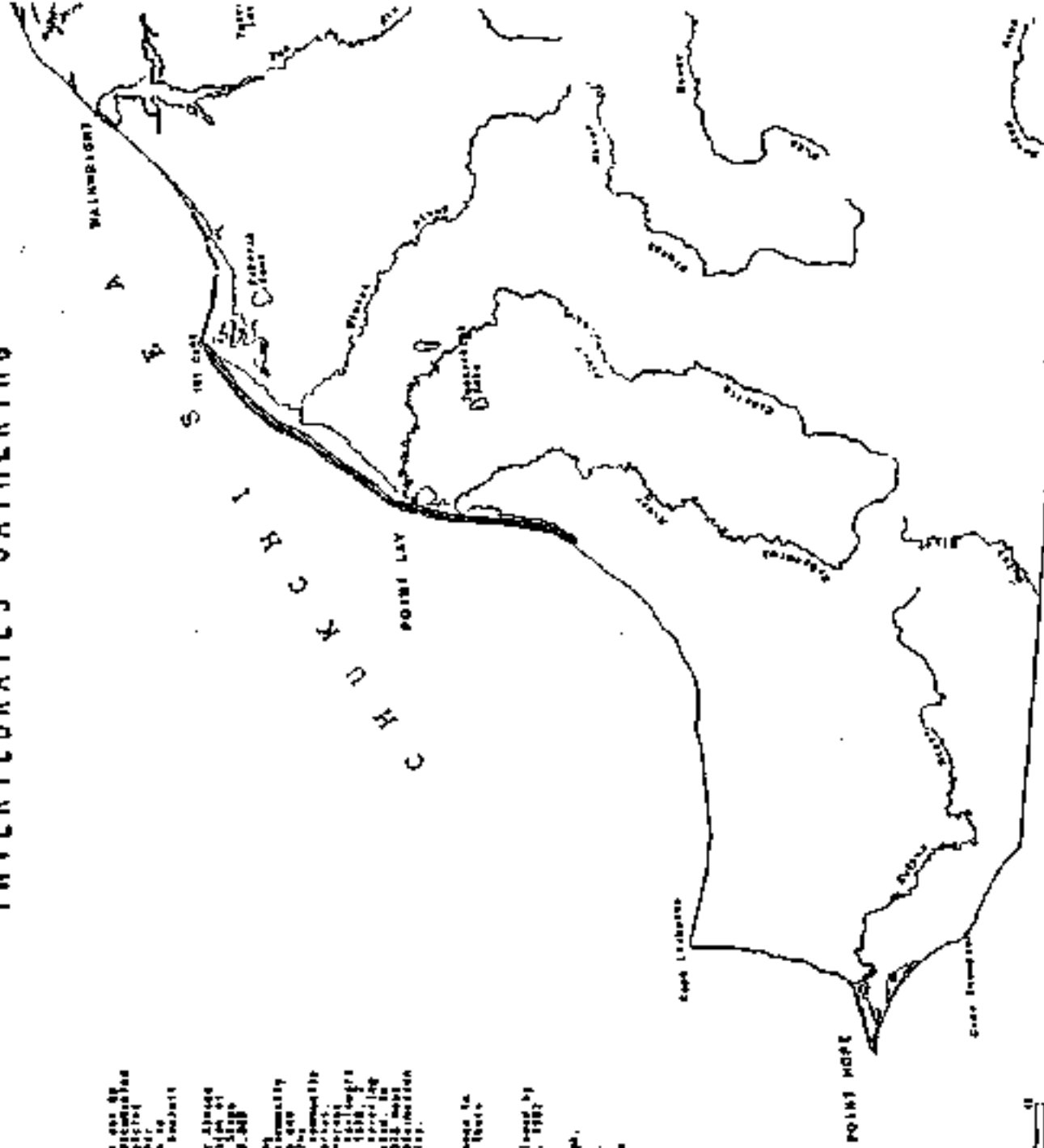
The map shows the distribution of subsistence land use for invertebrates gathering. The map is based on a survey conducted by the U.S. Fish and Wildlife Service in 1964. The map shows the distribution of subsistence land use for invertebrates gathering.

The map shows the distribution of subsistence land use for invertebrates gathering. The map is based on a survey conducted by the U.S. Fish and Wildlife Service in 1964. The map shows the distribution of subsistence land use for invertebrates gathering.

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The map shows the distribution of subsistence land use for invertebrates gathering. The map is based on a survey conducted by the U.S. Fish and Wildlife Service in 1964. The map shows the distribution of subsistence land use for invertebrates gathering.

Scale  
1:50,000  
NAD 83  
Spheroidal









# SUBSISTENCE LAND USE - POINT LAY VILLAGE FUEL & STRUCTURAL MATERIAL GATHERING



This map was made to show subsistence use of Point Lay, Alaska, and the surrounding area. It was made by the U.S. Fish and Wildlife Service, Alaska Division, Fairbanks, Alaska, in 1968. The map is based on aerial photographs and ground surveys. It shows the areas used for gathering fuel and structural materials. The map is not to scale. It is a general representation of the area.

Source: Aerial photos supplied by Alaska Department of Fish and Game, Division of Wildlife Management, Fairbanks, Alaska, 1968. Map scale: 1:100,000.

Map scale: 1:100,000. The map is based on aerial photographs and ground surveys. It shows the areas used for gathering fuel and structural materials. The map is not to scale. It is a general representation of the area. The map is based on aerial photographs and ground surveys. It shows the areas used for gathering fuel and structural materials. The map is not to scale. It is a general representation of the area.

Point Lay is a village in the State of Alaska. It is located on the coast of the Chukchi Sea. The village is the only one of its kind in the State. It is a small village with a population of about 100 people. It is a general representation of the area.

Map scale: 1:100,000. The map is based on aerial photographs and ground surveys. It shows the areas used for gathering fuel and structural materials. The map is not to scale. It is a general representation of the area.

Map scale: 1:100,000. The map is based on aerial photographs and ground surveys. It shows the areas used for gathering fuel and structural materials. The map is not to scale. It is a general representation of the area.

Map scale: 1:100,000. The map is based on aerial photographs and ground surveys. It shows the areas used for gathering fuel and structural materials. The map is not to scale. It is a general representation of the area.

FUEL & STRUCTURAL MATERIAL  
Gathering  
Structural  
Material

POINT LAY



Scale







# SUBSISTENCE LAND USE - POINT LAY VILLAGE SEAL HUNTING



This map depicts those subsistence and hunting lands which are occupied, administered, or used by the Point Lay community. The map shows the location of the village and the surrounding area. The map is based on information obtained from the community and is not intended to be a legal document.

Source: Data collected from community members and the community itself. The map is based on information obtained from the community and is not intended to be a legal document.

This map depicts those subsistence and hunting lands which are occupied, administered, or used by the Point Lay community. The map shows the location of the village and the surrounding area. The map is based on information obtained from the community and is not intended to be a legal document.

Point Lay's population was 100 in 1950. The map shows the location of the village and the surrounding area. The map is based on information obtained from the community and is not intended to be a legal document.

Community members were interviewed in 1950. The map shows the location of the village and the surrounding area. The map is based on information obtained from the community and is not intended to be a legal document.

Map Projection: North-South, Equatorial. The map shows the location of the village and the surrounding area. The map is based on information obtained from the community and is not intended to be a legal document.

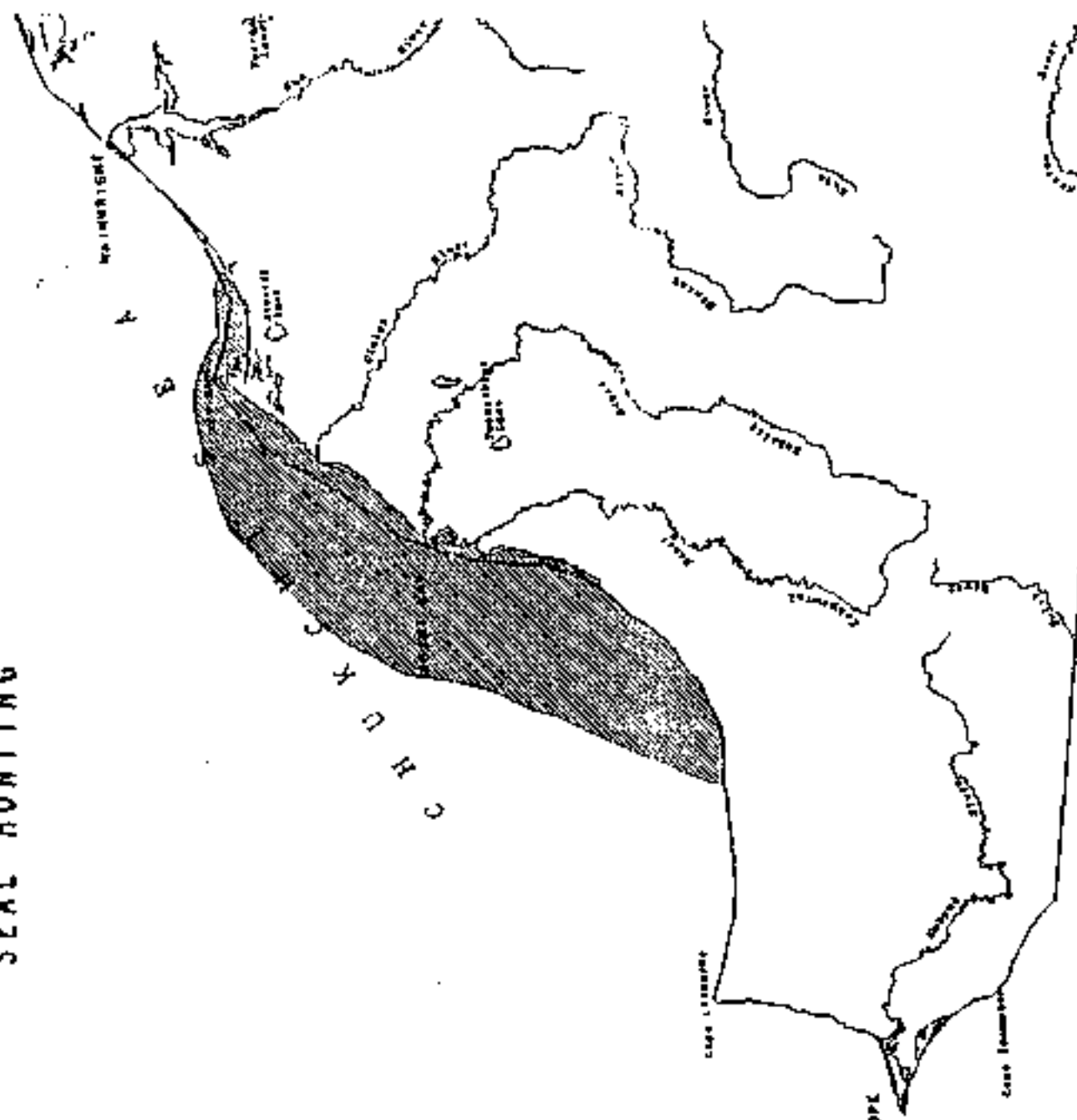
Map Projection: North-South, Equatorial. The map shows the location of the village and the surrounding area. The map is based on information obtained from the community and is not intended to be a legal document.

Scale  
1:100,000  
1:200,000  
1:300,000  
1:400,000

POINT LAY

0 10 20 30 40 50 60 70 80 90 100

Scale



# SUBSISTENCE LAND USE - POINT LAY VILLAGE POLAR BEAR HUNTING



This map indicates those subsistence uses by residents who have been determined. Undetermined uses are shown in white. Areas shown in white indicate that the uses are not determined. Areas shown in white indicate that the uses are not determined. Areas shown in white indicate that the uses are not determined.

Source: Statistics from the Point Lay Village, Alaska, 1950. Scale 1:500,000.

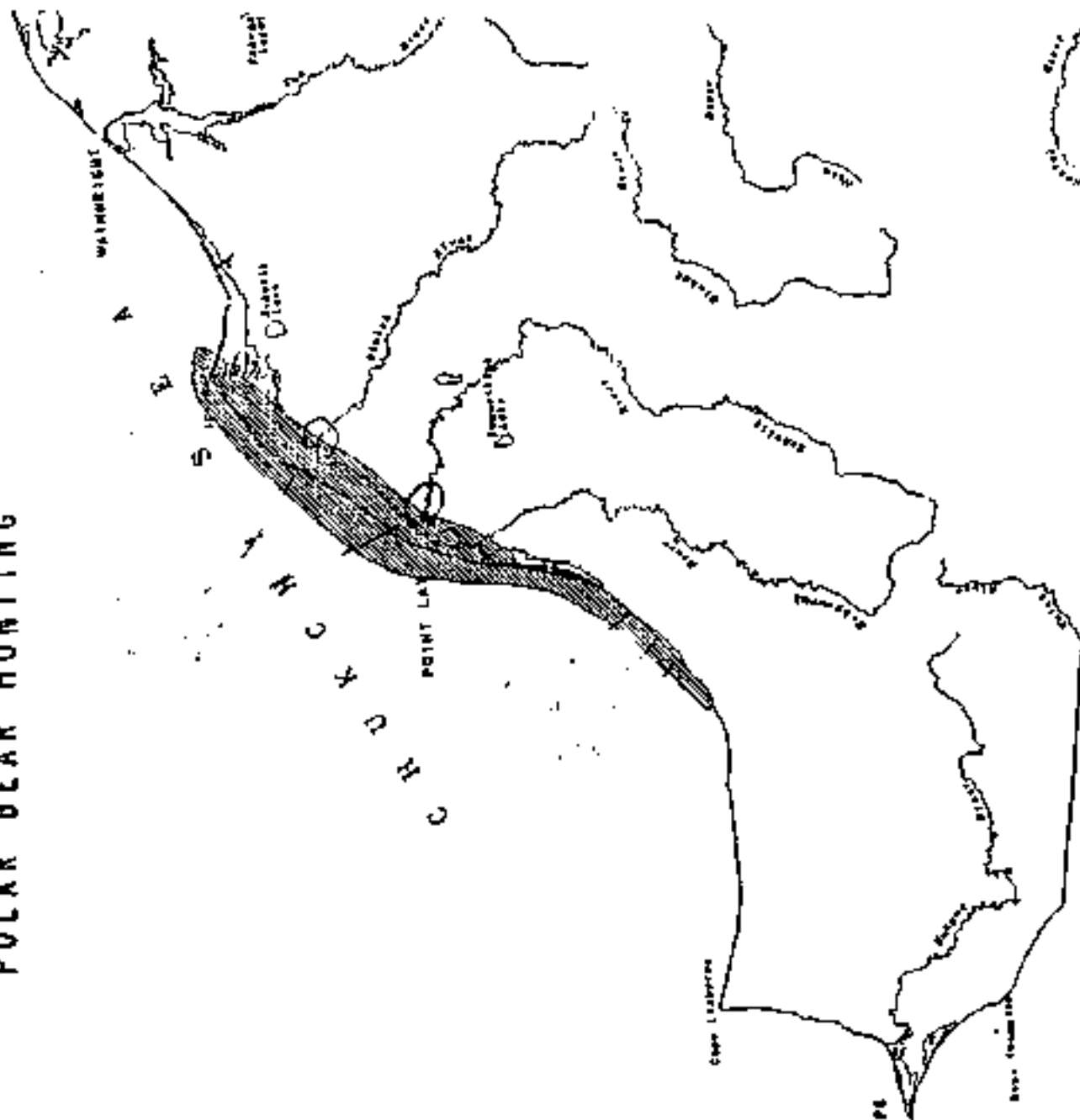
Data were collected through mapping activities and review of census data. The map shows the distribution of subsistence uses by village. The map shows the distribution of subsistence uses by village. The map shows the distribution of subsistence uses by village.

Total land population was 50 persons in 1950. The population in 1950 was 50 persons. The population in 1950 was 50 persons.

Community subsistence uses were determined by the village. The community subsistence uses were determined by the village. The community subsistence uses were determined by the village.

Map Projection: North Polar Projection. Spheroid: Bessel. Datum: Potsdam. Scale: 1:500,000.

Map Information: Alaska's Rural Area. Date: May, 1950.









SUBSISTENCE LAND USE - POINT LAY VILLAGE  
ALL RESOURCE CATEGORIES

[illegible]

Source: The Bureau of the Census, U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts, Table 1.1, Gross Domestic Product, 1959-1968, Washington, D.C., 1969.

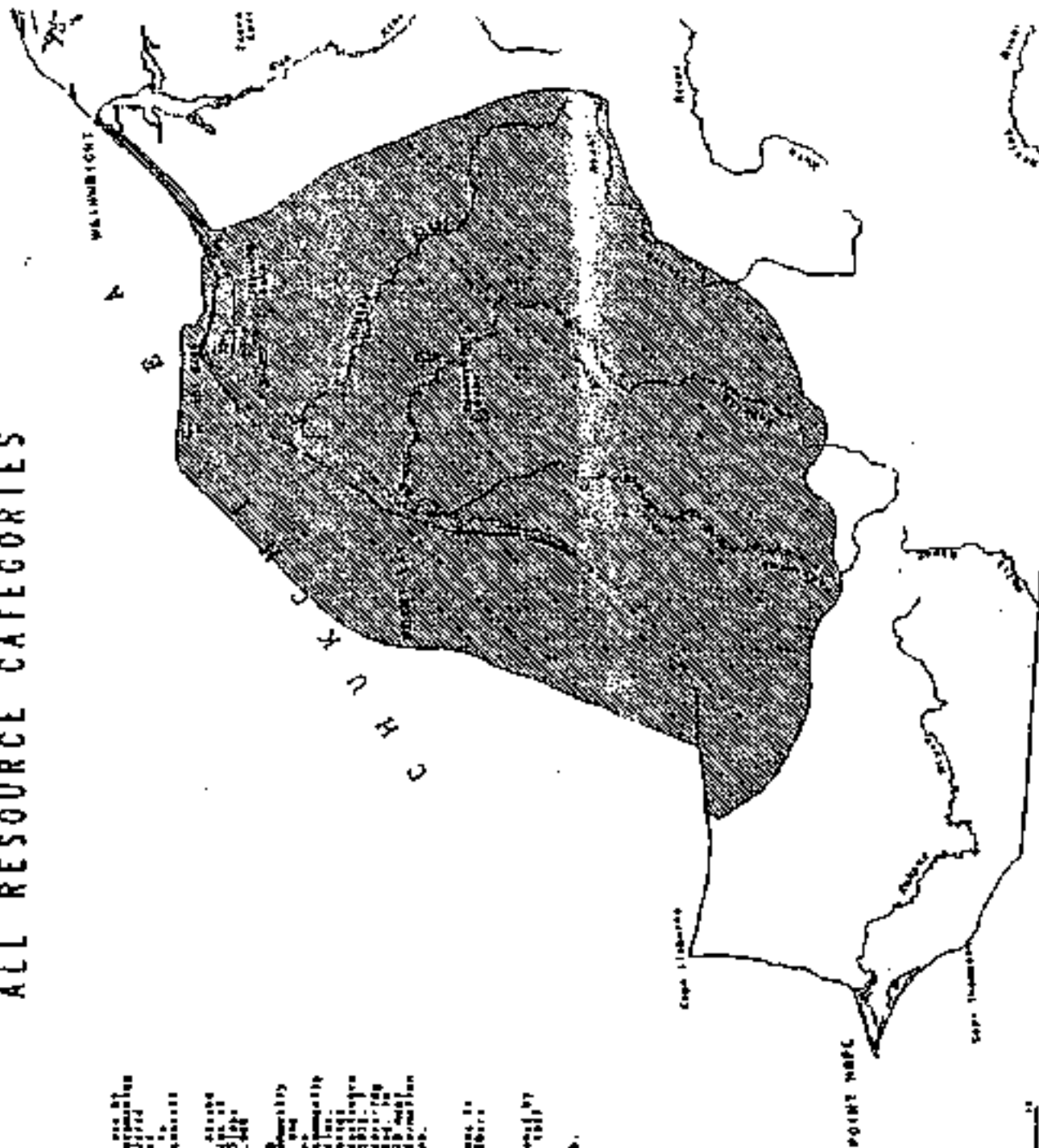
[illegible]

姓名	性别	年龄	职业	住址	联系电话
王小明	男	35	教师	北京市朝阳区	13800138000
李小红	女	28	医生	北京市海淀区	13900139000
张大力	男	45	工程师	上海市浦东新区	13600136000
刘小华	女	30	会计	广州市天河区	13500135000
陈伟强	男	40	经理	深圳市南山区	13400134000
赵小芳	女	25	护士	武汉市武昌区	13300133000
孙志强	男	38	律师	北京市西城区	13200132000
周小丽	女	32	作家	成都市锦江区	13100131000
吴大伟	男	42	程序员	杭州市西湖区	13000130000
郑小娟	女	27	设计师	南京市鼓楼区	12900129000
冯国强	男	48	教授	西安市雁塔区	12800128000
马小梅	女	33	歌手	昆明市五华区	12700127000
徐志强	男	37	记者	海口市琼山区	12600126000
黄小华	女	29	翻译	贵阳市南明区	12500125000
宋伟明	男	41	建筑师	海口市秀英区	12400124000
周小芳	女	26	舞蹈家	贵阳市观山湖区	12300123000
吴大伟	男	43	科学家	贵阳市云岩区	12200122000
郑小娟	女	31	画家	贵阳市南明区	12100121000
冯国强	男	46	企业家	贵阳市南明区	12000120000
马小梅	女	34	模特	贵阳市南明区	11900119000
徐志强	男	39	作家	贵阳市南明区	11800118000
黄小华	女	30	歌手	贵阳市南明区	11700117000
宋伟明	男	44	程序员	贵阳市南明区	11600116000
周小芳	女	28	设计师	贵阳市南明区	11500115000
吴大伟	男	47	教授	贵阳市南明区	11400114000
郑小娟	女	32	舞蹈家	贵阳市南明区	11300113000
冯国强	男	49	科学家	贵阳市南明区	11200112000
马小梅	女	35	画家	贵阳市南明区	11100111000
徐志强	男	40	企业家	贵阳市南明区	11000110000
黄小华	女	31	模特	贵阳市南明区	10900109000
宋伟明	男	45	作家	贵阳市南明区	10800108000
周小芳	女	29	歌手	贵阳市南明区	10700107000
吴大伟	男	46	程序员	贵阳市南明区	10600106000
郑小娟	女	33	设计师	贵阳市南明区	10500105000
冯国强	男	50	教授	贵阳市南明区	10400104000
马小梅	女	36	舞蹈家	贵阳市南明区	10300103000
徐志强	男	41	科学家	贵阳市南明区	10200102000
黄小华	女	32	画家	贵阳市南明区	10100101000
宋伟明	男	47	企业家	贵阳市南明区	10000100000

【例題】次の文章を読んで、下の問いに答えなさい。

[illegible]

Imp. suggestion: Wilson's Liquid Photo  
Date: Nov. 1944



## **4.0 RESOURCE ANALYSIS: KASEGALUK LAGOON**

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Activities and uses of coastal resources within and adjoining the Kasegaluk Lagoon AMSA have the potential to adversely affect sensitive habitats and fish and wildlife populations. There is also the potential for conflicting uses of coastal resources within the AMSA, particularly where development activities may impact vulnerable habitats, subsistence harvest activities, or biological functions of fish and wildlife. A primary purpose of the Area Meriting Special Attention process is to identify existing and proposed uses of coastal resources, and to provide a mechanism for resolution of potentially conflicting activities within the AMSA area.

The following discussions identify some uses and activities within the AMSA, both existing and potential (Section 4.1). The analysis discussion also addresses potential impacts of activities and possible mitigative measures to minimize disturbance (Section 4.2).

### **4.1 COASTAL RESOURCE USES AND ACTIVITIES WITHIN THE AMSA**

In the area encompassed by and adjoining the Kasegaluk Lagoon AMSA, uses of coastal resources include activities such as:

- subsistence harvests of fish and wildlife;
- local community improvement projects related to trails, roads, and fuel storage/distribution facilities;
- extraction of gravel for building and facility pads;
- offshore oil and gas exploration in the Chukchi Sea;
- potential undersea pipelines for shore delivery of petroleum;
- potential construction of coastal port facilities for loading of coal or petroleum; and
- potential construction of onshore pipeline facilities and/or roadways for transportation of oil and/or coal

Some examples of ongoing and proposed development activities in the area of influence for the Kasegaluk Lagoon AMSA are discussed below:

#### **Community Improvements:**

Point Lay has proposed construction of a foundation pad, containment dikes, and an access road for a proposed fuel storage tank farm located within the community. The

purpose of the project is for storage and delivery of fuel for heating and electric power generation.

The source of the gravel fill material is an existing stockpile located at Point Lay. The tank farm will consist of two tanks with a capacity of 125,000 gallons each. A diked and lined containment area will have the capacity to hold 154% of the volume for each of the storage tanks. Construction of the fill pad will occur during the summer of 1989 to ensure maximum compaction; the remainder of the project will commence in July and be completed in November 1989. The associated pipeline would be used for refilling the fuel storage tanks each summer from the fuel supply barge, and also for delivery of fuel from the tanks to the users in Point Lay. The majority of the pipeline will be buried under an existing road, with the balance of the pipeline placed in a winter-excavated trench.

#### **Trail Marking:**

During 1989, the Bureau of Land Management will mark the 90-mile trail between the villages of Wainwright and Point Lay with reflective fiberglass markers to identify winter use trails and easements. BLM will complete an environmental assessment of the trail route and perform an on-the-ground archaeological clearance in August 1989 just prior to the staking. After the trail is marked, the Bureau of Indian Affairs will provide a prefabricated emergency shelter to be placed on BLM-managed public lands along the trail.

#### **Outer Continental Shelf Oil and Gas Development:**

In May 1986, the Minerals Management Service offered 25.6 million acres in the Chukchi Sea east of the Kasegaluk Lagoon AMSA for bid lease to explore for oil and gas deposits in the offshore area. Approximately 3.8 million acres were deferred from the lease offering to provide a coastal buffer zone, including all blocks shoreward of the 20 meter isobath. Three hundred and fifty leases were issued as a result of Sale 109.

Shell Western Exploration and Production, Inc., proposes to commence exploration drilling on their leases during the summer of 1989 utilizing the Canadian drill ship Canmar Explorer III. The current schedule calls for spudding the first of potentially eight wildcat wells over the next four years at a site 75 miles offshore of the western Alaska coast. The Klondike Prospect site is located in a water depth of approximately 140 feet; the proposed drilling depth is 15,042 feet. This venture will be the first exploration for oil and gas deposits in the Chukchi Sea.

The drilling operation will be staged out of the old Naval Arctic Research Laboratory at Barrow, about 150 miles from the drill site. A barge and tugboat will operate from a second

staging area at Kotzebue Sound for supply purposes and as part of the oil spill contingency plan.

Additional prospects which Shell Western proposes to drill are within 50 miles of the coastline in water depths of 65 to 120 feet; drilling depths at these sites are anticipated to be 7,800 to 9,500 feet.

In January 1989, the Minerals Management Service issued a "Call for Information and Nominations" and Notice of Intent to Prepare an Environmental Impact Statement for Sale 126 in the Chukchi Sea. The oil and gas lease sale was tentatively scheduled for May 1991. The area of interest encompassed approximately 29.5 million acres extending from Point Hope to Peard Bay and ranging from 3 to 245 miles offshore from the Alaska coast. Within this area, water depths varied from 25 to 300 feet.

#### **Chukchi Sea Potential OCS Development Scenario:**

The Minerals Management Service has developed a hypothetical development scenario for oil and gas production in the Chukchi Sea Sale 109 area, should exploration activities discover commercial quantities of oil. Following delineation and production drilling, on-shore support facilities could be constructed at a location such as Point Belcher north of Wainwright to provide facilities for additional development drilling and pipeline laying. Oil would likely be transported ashore via pipeline, continuing onshore 650 km to the east to connect to the Trans-Alaska Pipeline System. If a very significant quantity of oil were discovered, oil could also be pumped ashore in the vicinity of Cape Beaufort and transported across the Lisburne Peninsula to a terminal near Kivalina. If only a small commercial quantity of oil were discovered, oil would most likely be shipped from an offshore terminal (McCrea, 1987).

#### **Mineral Occurrences:**

Potential belts of gold, silver, copper, lead, zinc, iron, platinum, and uranium have been identified in inland areas on the Lisburne Peninsula south of the Kasegaluk Lagoon AMSA. A belt of bituminous and sub-bituminous coal approximately 16 miles wide has been identified along the west flank of the Lisburne Hills. Coal prospects are located along the coast, including three near Cape Lisburne and one near Cape Thompson (USFWS, 1988).

#### **Military Activities:**

The U.S. Air Force operates a station at Cape Lisburne. Although there have been as many as 100 personnel stationed there in recent years, the staff has been reduced to a crew of eight. During the summer, numbers increase to about 20 with the addition of

temporary maintenance crews. The Air Force operates a rock quarry on U.S. Fish and Wildlife Service refuge lands under special use permits. The quarry rock is used for maintenance of the runway and other base facilities (USFWS, 1988).

## **4.2 POTENTIAL IMPACTS OF ACTIVITIES**

Some types of development impact and sites vulnerable to disturbance within and adjoining the Kasegaluk Lagoon AMSA are discussed below. The summary is not intended to be comprehensive, but to outline the types of concerns and potentially conflicting uses of coastal resources which may occur in the AMSA.

### **Gravel Mining:**

Dredging of gravel materials from the rivers, lakes, and coastal waters of the AMSA has the potential to adversely affect the quality and function of aquatic habitats, and to affect subsistence harvest activities in the affected waterbodies. At Point Lay, dredging sites in the Kokolik River and Kasegaluk Lagoon had the potential to adversely affect subsistence fisheries by interfering with pink salmon migration in the Kokolik River, and by interfering with pink salmon movements and feeding near the barrier islands of Kasegaluk Lagoon (Craig and Schmidt, 1982). A follow-up report by the same authors (1985) documented the subsistence fishery at Point Lay, monitored baseline hydrological conditions in the lower Kokolik River and Kasegaluk Lagoon, and documented the patterns of turbidity and suspended sediment in the river and lagoon resulting from dredging activities.

Dredging produced documented direct impacts of changes in depth, turbidity, and suspended sediments, and removal of substrate materials. Increases in turbidity and suspended sediments were limited in extent and generally small in magnitude; increased levels of these water quality parameters were detected at the mouth of the gravel stockpile outflow and for a distance of about 1 km downstream. Pink salmon appeared to successfully migrate past the active dredging operation. A section of the Kokolik River channel was dredged to a depth of 6-7 meters (from a pre-dredging depth of 2 meters). Craig and Schmidt (1985) speculated that deepening of the river channel was expected to have a low impact on fish populations in the area, largely because use of other deep water areas in the Kokolik River delta by fish appears to be low.

### **Marine Mammal Sensitivity to Offshore Development Activities:**

The Minerals Management Service evaluated the potential effects of offshore oil and gas development in the Chukchi Sea area on marine mammals at a 1983 synthesis meeting on The Barrow Arch Environment and Possible Consequences of Planned Offshore Oil and Gas Development.

The meeting summary indicated that the vulnerabilities of marine mammals to oil and gas development activities vary seasonally. In winter, only ringed seals and polar bears are common but the wide distribution of their populations reduces the potential for significant impacts. Two site-specific concerns in winter are activities in the vicinities of bear dens and on-ice seismic activity near breeding ringed seals. During spring, bowhead and beluga whales are vulnerable in the nearshore lead system; of less concern are walrus, bearded seals, and spotted seals in this lead system. In summer, lagoons and bays used by beluga whales and spotted seals (Kasegaluk in particular) and a walrus haul-out near Cape Lisburne are coastal sites of sensitivity to disturbance.

Beluga whales when in confined areas such as spring leads or lagoons are potentially sensitive to noise and nearby activities of people and machines. Belugas may not be particularly sensitive when not so restricted. Bowhead whales in general show considerable tolerance to ongoing noise from offshore drilling and dredging in open seas, but react more strongly to rapidly changing situations such as approaching boats or aircraft. Bowheads may elicit stronger reactions in more restricted situations such as nearshore leads during spring migration. Long-term responses of whales to noise and human activity have not been investigated.

In a recent evaluation of the effects of noise and disturbance on major haul-outs of Pinnipeds in the Bering Sea (Johnson et al., 1989), it was noted that reactions of seals and walrus to noise stimuli was extremely varied, and different reactions could be expected based on the physical characteristics of the haul-out site and the type of noise source. The usual location of rookeries and haul-out sites on beaches and rocky shorelines results in this habitat having levels of ambient noise that are closely related to sea state. Aircraft and vessels present a transient, rise and fall type of noise signature to the haul-out area, the rate of which may be an important factor in determining the level of disturbance. Underwater sound levels produced by direct aircraft overflight of shallow water areas are comparable to the levels produced in the air near the water surface. The investigators concluded that there is no quantitative information describing threshold sound levels which cause disturbance in Pinnipeds, thereby preventing a quantitative determination of the actual zones-of-influence of different sounds generated by development activities near haul-out sites.

#### **Disturbance of Feeding Gray Whales:**

A study of the behavioral responses of gray whales to typical industrial noise (Malme, 1987) provides some insight to the types of activities which may affect feeding gray whales along the offshore coastline of the Kasegaluk Lagoon AMSA. This research concluded that feeding gray whales appear to have acoustic disturbance sensitivity comparable to that found for migrating gray whales. Limited test data suggested that feeding activity may be

interrupted by air gun sound levels near 170 dB and above, but further analysis is required. Playback of drillship sound levels above 110 dB was noted to cause gray whales to have a general movement away from the sound source. The research also suggested that there is some evidence for habituation to a noise stimulus, since continued (and louder) exposures for a given whale often produced smaller behavioral changes.

### **Sensitivity of Waterbirds to Development Activities:**

Potential risks to bird populations from offshore oil and gas exploration and development include oil spills, noise and disturbance activities of people, equipment, and facilities, and loss of important coastal habitat use areas. Locations and times where birds congregate to feed, molt, stage, or nest are where bird populations are most vulnerable. Such areas include Cape Lisburne and offshore and coastal areas within 80 km of the cape (spring and fall); Kasegaluk Lagoon and vicinity (summer and fall); Point Hope and vicinity (summer and fall); and the lead system offshore of the fast ice (winter and spring). Bird populations most vulnerable to the long-term effects of development activities are those with slow natural rates of reproduction (Minerals Management Service, 1984).

### **Habitats Vulnerable to Disturbance and Development Activities:**

During the synthesis meeting for the Barrow Arch Environment (Minerals Management Service, 1984), several coastal and marine environments in the Kasegaluk Lagoon AMSA area were identified for their sensitive habitats and important coastal resource areas. The workshop participants agreed that the following areas should be afforded the highest possible levels of protection when considering development activities and competing uses of coastal resources. In addition, the workshop noted that oil spills from oil and gas development, transportation, or other development activities would be particularly detrimental if they occurred near Cape Lewis, Cape Lisburne, Ledyard Bay, or Icy Cape. Spills at those locations would be, in all likelihood, major disasters; a spill in Ledyard Bay could have long-lasting adverse effects on seabird food webs.

**Cape Lisburne** - Cape Lisburne is the northernmost large seabird colony in western North America and one of only two major concentrations of colonial-nesting seabirds in the eastern Chukchi Sea. The cliff-nesting habitats, and the marine coastal waters which provide food to support the nesting effort, are vulnerable to disturbance and alteration of habitats and productivity.

**Kasegaluk Lagoon** - Kasegaluk Lagoon, including associated wetlands and nearby coastal waters, is the most important coastal lowland habitat for non-cliff-nesting birds in the northeastern Chukchi Sea. The Icy Cape area serves as a focal point for a significant portion of the spring, summer, and fall bird migrants and provides the largest concentration

of mud flat and salt marsh habitats found between Barrow and Kotzebue Sound. These habitats and protected waters of the lagoon provide essential summer and fall feeding, molting, and staging habitat for thousands of waterfowl, shorebirds, gulls, and terns. The salt marshes may be especially vital to populations of black brant which are attracted to Icy Cape in the fall where the salt marshes provide the only known fall feeding and resting stop between Teshekpuk Lake and Izembek Lagoon on the Alaska Peninsula. The small islands in the lagoon between Icy Cape and Point Lay are essential predator-free nesting habitat for colonial nesting common eiders and Arctic terns.

In addition to the resource values for birds, the Kasegaluk Lagoon area is a highly important calving and feeding area for beluga whales during the summer, and an important summer feeding and haul-out area for spotted seals. The protected waters, productive feeding environment, and preferred haul-out sites are of limited availability in the remainder of the Chukchi Sea coastline.

Point Hope - The Point Hope spit and associated wetlands comprise an important area of coastal lowland habitat for non-diving birds. The spit serves as a local point for avian migrants, and the beaches, lagoons, ponds, and wetlands provide significant nesting, feeding, molting, and staging habitat for large numbers of locally and regionally important bird species.

Pitmegea River and Thetis Creek Deltas - The deltas of these two watercourses at their confluence with the marine waters of Ledyard Bay serve as summer-long, daily resting and bathing habitats for thousands of seabirds that commute from Cape Lisburne to feed in Ledyard Bay. The deltas may also serve as annual, late-summer staging areas for several thousand subadult glaucous gulls.

Ledyard Bay - Ledyard Bay is a highly productive area of the eastern Chukchi Sea, perhaps the most important in the area for seabirds and waterfowl. Relatively shallow water and abundant marine fauna combine to provide rich spring, summer, and fall feeding habitats for birds. Almost all the seabirds nesting at Cape Lisburne and Cape Lewis feed in Ledyard Bay from June through August. The Bay is also especially significant to populations of common and king eiders which stage and molt in this area in July and August. Coastal areas of eastern Ledyard Bay are also reported to provide feeding and staging areas for beluga whales which are occasionally delayed from moving into the nearshore waters of Kasegaluk Lagoon due to ice conditions.

Coastal Waters Off Cape Lisburne - The nearshore and offshore waters west, north, and northeast of Cape Lisburne provide significant late summer and fall feeding habitat for the majority of seabirds nesting at Capes Lisburne and Lewis. The important feeding area is generally defined as waters within 120 km of shore between the entrance to Ledyard Bay



and true heading 270 degrees. However, most concentrated feeding generally occurs within 60 km of shore.

Important additional research needs relative to birds include:

- surveys to determine distributional use patterns by species in the ice leads in winter and spring, in Ledyard Bay and Kasegaluk Lagoon in summer and fall, and in the open-water pelagic ecosystem;
- investigations of natural mortality and recruitment patterns in Alcids and other long-lived species; and
- studies of basic life history of marine prey of birds to determine the spawning, rearing, and overwintering requirements of these important forage fishes.

## **5.0 ISSUES AND CONFLICTS: KASEGALUK LAGOON AMSA**

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### **5.1 INTRODUCTION**

Identification of issues and potential conflicts between the users of coastal resources is an important part of the AMSA planning process. The purpose of the plan is to resolve these issues and conflicts. The issues and conflicts to be addressed provide a focus for the information presented in the resource inventory of the AMSA plan. They also give an indication of which agencies and groups are most appropriate to participate in the planning and review team for the AMSA. Issues and potential conflicts provide direction for the types of policies necessary to develop additional management guidance for the AMSA (beyond the policy direction of the federally approved draft of the Borough coastal management program). Finally, the issues and conflicts help determine what forms of implementation, in addition to the consistency review process, might be appropriate to consider for the AMSA plans.

One of the objectives of the AMSA process is to work with affected communities, agencies, and resource user groups to develop additional guidance for activities taking place in areas of special value or importance. The identification of issues and conflicts should incorporate ideas and direction from these groups. For the North Slope Borough AMSA planning effort, the identification of the issues and conflicts presented in this chapter obtained information from the following sources:

- meetings and discussions with individuals in the villages of Point Lay, Point Hope and Nuiqsut
- a meeting of state and federal agencies to review issues and conflicts that came out of village meetings
- a meeting with representatives of the oil and gas industry to discuss issues and conflicts that came out of village and agency meetings

### **5.2 ISSUES AND CONFLICTS**

Most of the issues and conflicts identified for the Kasegaluk Lagoon AMSA reflect the value and unique nature of the fish and wildlife resources of the area; the traditional subsistence way of life of the people of Point Lay; and the geophysical hazards that are present, especially in offshore areas. The North Slope Borough and its residents wish to avoid conflicts between resource development and these values and characteristics of the area.

## FISH AND WILDLIFE MANAGEMENT

Kasegaluk Lagoon and its barrier islands contain habitat that is unique to the North Slope. In particular, it provides habitat that is extensively used by beluga whales during the summer, which are in turn harvested by residents of Point Lay. The AMSA also includes productive habitat for seal, waterfowl and other birds, and caribou. Some of the management issues for the AMSA include obtaining a better understanding of fish and wildlife use of the habitats it contains, including changes in distribution and abundance. Other issues address the sensitivity of fish and wildlife to impacts.

- Issue 1 protect beluga whales and important habitat within and outside Kasegaluk Lagoon from disturbance associated with resource development and supporting activities
- Issue 2 assess caribou herd utilization of habitat within the AMSA, and minimize potential impacts from development activities
- Issue 3 evaluate a decline in grayling stocks observed by village residents
- Issue 4 assess the extent of important habitat for waterbird nesting, rearing and staging within the AMSA
- Issue 5 assess and minimize the potential impacts from general disturbance of fish and wildlife resources resulting from human activities

## GEOPHYSICAL HAZARDS

Village residents are aware of the forces created by storm and ice conditions in the Chukchi Sea. They are concerned about the ability to safely explore for and develop resources in coastal and marine waters. The effects of dredging and gravel extraction on natural processes such as erosion are also a concern.

- Issue 1 assess ice gouging effects on the integrity of buried oil and gas pipelines that could be potentially located within the AMSA, and the effectiveness of measures used to minimize potential damage
- Issue 2 assess the effects of sea ice conditions on the integrity of drill ships and other forms of oil drilling platforms in waters off the AMSA, and the effectiveness of measures used to minimize potential damage
- Issue 3 assess the effects of storm hazards during strong west winds on the integrity of drill ships and other forms of oil drilling platforms in waters off the AMSA, and the effectiveness of measures used to minimize potential damage
- Issue 4 assess how dredging, gravel extraction and other human activities have effected erosion in the Kasegaluk Lagoon system in the past
- Issue 5 evaluate whether natural erosion of the barrier islands appears to be increasing; the southwest portion of the lagoon is filling in and may be related to the erosion

- Issue 6 assess the potential effects of erosion on structures and human activities within the AMSA

## **SUBSISTENCE**

Subsistence is of extreme importance to the villages in the North Slope Borough, not only for its contribution to diet and economy, but for the foundation it provides to the lives, culture and kinship of borough residents. While the economic benefits of resource development are welcome, protection of subsistence resources and the ability to harvest them is a higher priority.

- Issue 1 evaluate the cause of diminishing catches of grayling experienced by local residents
- Issue 2 maintain beluga whale harvest levels by local residents
- Issue 3 maintain other marine mammal harvest levels by local residents
- Issue 4 maintain caribou harvest levels by local residents
- Issue 5 maintain waterbird and egg harvest levels by local residents
- Issue 6 minimize restrictions of local resident access and hunting in traditionally used areas, that could result from resource development

## **COMMERCIAL AND RECREATION USE OF FISH AND WILDLIFE RESOURCES**

State and federal managers of public lands are often required to accommodate multiple uses of those lands, including recreation and commercial uses. It is desirable to allow for such uses in a manner that does not compete for subsistence resources or cause social impacts to Borough villages.

- Issue 1 evaluate the ability of recreational and commercial harvests to occur without significantly competing with subsistence harvests
- Issue 2 minimize trespass on Native lands and disturbance of traditional hunting and fishing camp sites

## **RESOURCE DEVELOPMENT**

Sound resource development will benefit residents on national, state and local levels. The objective of coastal management is to balance resource development with the protection of other coastal resource. Oil and gas exploration is scheduled on federal leases northwest of the AMSA in the summer of 1989; coal mining has occurred on a small scale test basis, and could increase in volume if markets permit. Local residents are concerned about development impacts on their communities and on the fish and wildlife resources that they harvest.

### Coal Development

- **Issue 1** assess potential impacts of proposed dredging for barge and ship docking in an area that is utilized by beluga whales for holding and feeding before entering Kasegaluk Lagoon
- **Issue 2** evaluate the location and construction characteristics of potential roads that may be used to take out coal to markets or port sites, and minimize effects on fish and wildlife
- **Issue 3** assess boat traffic associated with the development and export of coal resources, and its potential impacts on beluga whales, including the frequency of trips and noise characteristics

### Oil and Gas Development

- **Issue 4** assess the ability of the oil industry to operate safely on their Chukchi Sea leases, and employ effective measures to prevent accidents and minimize impacts
- **Issue 5** assess the nature of ice and storm hazards in marine and coastal waters, and the ability of exploration and production facilities to withstand those hazards
- **Issue 6** assess the ability of the oil industry to respond to an accident, such as an oil spill, during hazardous storm or ice conditions
- **Issue 7** assess the ability to detect or contain a spill that occurred from pipelines located under the ice
- **Issue 8** assess the effects of offshore oil and gas activities on beluga whales, including the frequency of trips and noise characteristics, and develop measures to minimize impacts
- **Issue 9** evaluate the location and construction characteristics of 1) potential routes to bring oil onshore via pipelines, 2) potential support facility sites, and 3) onshore pipeline routes

### Road Construction and Public Access

- **Issue 10** minimize public access on any road constructed for development of coal resources, thereby minimizing associated socioeconomic impacts and competition for fish and wildlife resources
- **Issue 11** provide for public access on state lands and navigable waters, in accordance with state regulations, and in a manner that minimizes impacts to local communities

## AIR, LAND, AND WATER QUALITY

There are increasing concerns in the North Slope Borough regarding air and water quality in the Arctic, and its effects on the people and the fish and wildlife. It is in the best interests of residents and resource developers alike to minimize project-specific and cumulative impacts from human activities.

- Issue 1 assess the ability to recover oil from a spill under the ice, and institute effective safeguards
- Issue 2 assess the ability to contain an oil spill during a storm event, and institute effective safeguards
- Issue 3 provide methods to control sources of and clean-up debris from offshore operations
- Issue 4 assess and implement proper disposal techniques and locations of drill muds, cuttings, and other wastes from exploration, development, and operations activities
- Issue 5 evaluate the quality and physical characteristics of the waters of Kasegaluk Lagoon and why they support such biological productivity
- Issue 6 assess potential water quality effects within Kasegaluk Lagoon resulting from dredge and fill and other human activities
- Issue 7 ensure the proper storage and disposal of fuels and other hazardous materials associated with human activities

## ARCHAEOLOGICAL AND HISTORICAL RESOURCES

The culture and history of the people of the North Slope is not only important to the residents of the North Slope Borough, but to the state and nation as well. The Borough, state and federal governments have established programs to protect and promote understanding of archaeological and historical resources.

- Issue 1 protect archaeological, historic, and traditional land use sites from resource development activities

## COORDINATION AND PLANNING

A major reason for local participation in coastal management is to increase their effective involvement in activities that can affect residents. The process of communicating and attempting to address concerns at an early stage of project development can decrease the likelihood for conflict later on. The desirability of communication with the villages applies not only to state and federal government and industry, but also to departments within the North Slope Borough.

- Issue 1 involve the Point Lay Village Council in planning for resource development and CIP projects
- Issue 2 coordinate regional planning efforts such as DNR area and related plans, disposals of state and federal resources (such as oil and gas lease sales), and borough comprehensive plans with the village of Point Lay
- Issue 3 provide monitoring and enforcement of stipulations on federal, state and borough permits

## 6.0 MANAGEMENT PLAN: KASEGALUK LAGOON AMSA

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### 6.1 INTRODUCTION

Under the provisions of 6 AAC 80.160(7), an Area Meriting Special Attention Plan is required to have *"a proposed management scheme which includes a description of proper and improper uses and activities of land and water within the area, a statement of policies which will be applied in managing the area, and an identification of the authority which will be used to implement the management scheme"*. The Objective of the AMSA plan is provide an additional level of guidance appropriate to the resource values and issues/conflicts, within the framework of existing coastal management decision-making.

### 6.2 USE OF POLICIES

#### **Enforceable Rules**

The policies presented in this chapter are the **"enforceable rules"** of the Area Meriting Special Attention Plan for Kasegaluk Lagoon. All land and water uses and activities occurring on state and private lands, and federal actions which directly affect coastal resources within the AMSA boundary are subject to the policies of the AMSA Plan. In addition, uses and activities must comply with the policies of the federally approved North Slope Borough Coastal Management Program. Uses and activities must comply with both the applicable AMSA Plan policies and general coastal management program policies to be considered "consistent" with the district's coastal management program. All parties participating in the consistency determination will use these policies as the standards for evaluating consistency.

#### **Administrative Policies**

In addition to the enforceable policies, several **administrative policies** have been included in the North Slope Borough Coastal Management Program. These policies are recognized as "unenforceable". This means that compliance with the policies cannot be required under coastal management regulations, but that compliance is desirable and recommended by the Borough. These policies are clearly labeled as administrative policies. By choosing to prepare a district coastal management program, the North Slope Borough is taking advantage of a forum to work with state and federal agencies and private landowners to affect the future of the Borough. While coastal management cannot accomplish all of the objectives of North Slope Borough, administrative policies can provide additional direction



for government, private industry and community efforts to attain those objectives. Of particular concern are administrative policies related to increased borough and village involvement in planning and decision making processes that affect North Slope Borough.

Administrative policies perform several functions:

- support the North Slope Borough Comprehensive Plan by incorporating some of its appropriate policies
- provide direction to the Borough in implementing its coastal management program
- support increased cooperation between the community, private industry, state and local government

### **Performance and Balance**

The AMSA policies are designed to clearly identify "performance standards" for the protection of important resource values and uses, and to provide for orderly and balanced use of coastal resources. In particular, the policies are intended to allow for some flexibility in making consistency determinations while providing clear guidance of the North Slope Borough's intent. Achieving balance is important, particularly where there are potentially competing goals (such as industrial development and protection of fish and wildlife and subsistence resources), where local preferences may differ from state and federal interests, or where short-term benefits of resource use may result in the loss of long-term values of other resources.

## **6.3 SUBJECT USES**

All land and water uses and activities occurring on Borough, state and private lands, and federal actions which directly affect coastal resources within the boundary of the AMSA plan are subject to the AMSA plan policies, including:

- land and water uses within the AMSA boundary which require approvals, including permits and certifications from the Borough, state or federal governments; and
- resource leasing activities that require federal, municipal or state permits, land disposals, regional plans, and community plans.

These include permitted activities that are subject to categorical approval, general concurrence, and individual project review under coastal management regulations. Land and water uses and activities occurring on state and private lands which directly affect the coastal resources within the AMSA are subject to the both the policies contained in the federally approved North Slope Borough Coastal Management Program and this AMSA Plan. Although federal lands and waters are excluded from the coastal area, uses and

activities occurring on federal lands and waters which directly affect the coastal area are subject to this program.

## **6.4 PROPER AND IMPROPER USES**

District programs must identify uses and activities, including uses of state concern, that are considered proper and improper within the coastal area. No uses are categorically prohibited within the AMSA plan boundary. For the Kasegaluk Lagoon AMSA, proper and improper uses are determined by policy requirements and land/water use categories.

All land and water uses and activities are considered proper as long as they comply with the policies of the North Slope Borough Coastal Management Program including the AMSA plan, ACMP standards, and applicable federal and state regulations. A land or water use or activity will be considered improper if it is inconsistent with ACMP standards or the policies of this program, or it does not comply with or can not be made to comply with the applicable federal and state regulations.

## **6.5 AMSA POLICIES**

### **COASTAL DEVELOPMENT**

#### **KL-1 Mitigation**

All land and water use activities shall be conducted with appropriate planning and implementation to mitigate potentially adverse effects on the following resources of local, state, or national importance:

- a) fish and wildlife populations and their habitats;
- b) subsistence uses and activities;
- c) water quality; and
- d) cultural resources.

The cost of mitigation relative to the benefit to be gained will be considered in implementation of the policy. Mitigation shall include and be considered in the following order of preference:

- a) avoid the loss altogether by not taking a certain action or parts of an action;

- b) when the loss cannot be avoided, minimize the loss by limiting the degree or magnitude of the action and its implementation;
- c) when the loss of resources and/or associated activities of local state or national concern cannot be minimized, restore or rehabilitate the resource to its pre-disturbance condition, to the extent feasible and prudent; and
- d) where the loss of important habitat or activities of local, state or national concern is substantial and irreversible and cannot be avoided, minimized or rectified, compensate for the loss by replacing, enhancing, or providing substitute resources or environments. Compensation may be in kind or out of kind and off site or on site. The preferred alternative is in kind and on site, to the extent feasible and prudent.

#### **KL-2 Disposal of Dredge Spoil**

Dredged materials disposed of in shoreline landfills shall not cause significant alteration of important habitats or significant adverse impacts to shoreline processes. On-shore disposal sites for dredged material shall be contained and stabilized to prevent erosion and leaching into adjacent waters. Offshore disposal of dredge spoil shall avoid important habitats and be conducted in compliance with state and federal water quality regulations.

#### **KL-3 Navigation Obstruction**

Uses and activities in coastal waters shall meet the following requirements:

- a) Structures, and buoys placed in navigable waters shall be visibly marked and placed in a manner to minimize navigation hazards or obstructions.
- b) To the extent feasible and prudent, all temporary and permanent developments, structures, and facilities in place more than one year (continuous or cumulative) in marine and estuarine waters within the AMSA shall be sited, constructed, operated, and maintained in a manner that does not create a hazard or obstruction to marine transportation or subsistence activities.

#### **KL-4 Disposal of Public Lands**

Public land made available for disposal, including resource development and settlement, shall include conditions on disposal so that subsequent use of such lands:

- a) avoid endangering human life and property;
- b) compliment existing uses, especially subsistence use; and
- c) maintain on-site fish and wildlife productivity, to the extent feasible and prudent.

**KL-5 Optimum Location of Development [Administrative Policy]**

The North Slope Borough and village of Point Lay will provide developers with assistance in the identification of suitable sites for industrial and commercial development which satisfy industrial requirements, meet safety standards, protect coastal resources, and maintain environmental quality.

**COASTAL HABITATS****KL-6 Maintenance of Lagoon and Nearshore Habitats**

Development along the shoreline and in coastal waters shall not result in significant adverse changes to water quality, bathymetry, coastal processes, or other characteristics that contribute to the use of the lagoon and near shore waters by beluga whales and spotted seals.

**KL-7 Maintenance of Fish Passage and Stream Characteristics**

Development activities, facilities, and structures shall be designed, sited, constructed, maintained and operated in a manner which does not impede or interfere with timely access to spawning streams by adult anadromous fish or natural movements of smolts or juvenile anadromous fish.

All bridges and culverts, to the extent feasible and prudent, shall:

- a) be sited, constructed, and maintained to avoid changing the direction and velocity of the stream flow;
- b) be sized to accommodate the best available estimate of the 25-year peak discharge without significantly interfering with volume, velocity, sediment transport, or substrate characteristics of the stream
- c) where constructed across anadromous fish streams, provide for free and unrestricted movement of adult, fry, and juvenile anadromous fish if anadromous fish use the stream above the development.

**KL-8 Water Removal from Fish Streams**

Water removal from fish-bearing waters shall require that the intake structure be surrounded by a screened enclosure to prevent fish entrapment in the water intake or impingement on the enclosure screen. Screen mesh size and maximum water velocity at the surface of the screened enclosure shall comply with criteria identified in authorizations issued by the Alaska Department of Fish and Game. Other technology and techniques which can be demonstrated to prevent the entrapment or impingement of fish may also be utilized, with the approval of the Alaska Department of Fish and Game.

**KL-9 Disturbance of Overwintering Areas**

Locations which provide overwintering habitat for anadromous or freshwater fish shall not be directly or indirectly adversely affected by activities which:

- a) alter the habitat;
- b) limit access by fish during critical periods; or
- c) induce auferis formation during the period from freezeup through breakup

**KL-10 Assessment of Important Habitat (Administrative Policy)**

The North Slope Borough, State and federal agencies, and private industry shall work together to assess the extent and utilization of important habitat for caribou, waterbirds, and marine mammals within the AMSA.

**GEOPHYSICAL HAZARD AREAS****KL-11 Offshore Hazards**

In order to minimize significant direct and indirect impacts on coastal resources within the AMSA, development in nearshore and marine waters shall assess the following impacts from geophysical hazards and incorporate effective measures to minimize impacts from:

- a) ice gouging effects on the integrity of buried oil and gas pipelines that could be potentially located within the AMSA;
- b) the effects of sea ice conditions on the integrity of drill ships and other forms of oil drilling platforms in waters off the AMSA; or
- c) the effects of storm hazards, particularly during strong west winds, on the integrity of drill ships and other forms of oil drilling platforms in waters off the AMSA.

**KL-12 Erosion**

Development activities shall retain existing vegetative cover in erosion-prone areas to the greatest extent feasible. In cases where development necessitates removal of vegetation, erosion shall be minimized through re-vegetation or by other appropriate erosion control measures.

## **SUBSISTENCE**

### **KL-13 Planning Processes [Administrative Policy]**

Where development activities may have a significant adverse impact on subsistence or personal use resources and activities, including access to subsistence use areas, the North Slope Borough and village of Point Lay will coordinate with affected resource users to identify concerns and to develop appropriate mitigative measures and stipulations for development activities.

## **AIR AND WATER QUALITY**

### **KL-14 Hazardous Substances**

Storage, transportation, cleanup, and disposal of hazardous materials (as defined in the Hazardous Materials Transportation Act) shall comply with federal, state and local laws and regulations. The Borough and the village of Point Lay shall be notified of the quantity, and mode and schedule of transportation or storage, when the quantity of material meets or exceeds the threshold quantity set under the Emergency Planning and Community Right-to Know Act.

### **KL-15 Spill Containment and Cleanup Equipment**

Any petroleum transport, storage, and refueling operation of 5,000 gallons or more shall maintain and have access to oil spill containment and cleanup equipment located on-site. Personnel trained in the use and maintenance of this equipment shall be available on-site.

### **KL-16 Drilling Waste Disposal [Administrative Policy]**

The North Slope Borough and the village of Point Lay will work with the oil and gas industry to assess and implement proper disposal techniques and locations of drill muds, cuttings, and other wastes from exploration, development, and operations activities.

### **KL-17 Planning and Coordination [Administrative Policy]**

The North Slope Borough and village of Point Lay will participate in a planning process that identifies appropriate responses to emergencies resulting from accidents involving hazardous substance storage, transportation, treatment, or disposal. The Borough will request that the Planning Commission be incorporated as a subcommittee of the Local Emergency Planning group established under federal Title III.

### **KL-18 Oil Spill Contingency Plans [Administrative Policy]**

The North Slope Borough and village of Point Lay shall participate in the development and review of oil spill contingency and spill containment and cleanup plans, when such plans are required by federal or state statutes or regulations.

## **MINING**

### **KL-19 Reclamation and Restoration**

Reclamation of all upland and floodplain mined sites shall be required unless such reclamation would cause greater adverse impact to the environment than leaving the area unreclaimed. At a minimum, reclamation shall include the following elements, as applicable:

- a) Overburden shall be stored above the 10 year floodplain of watercourses.
- b) At the end of each mining season, all disturbed areas shall be regraded to stable slopes. Within mean annual floodplains, regrading to ground contours which will not entrap fish nor significantly alter stream hydraulics shall occur at the end of each operating season. Tailings used in the construction of settling ponds and other essential facilities may be retained in place until completion of their use.
- c) At the completion of mining activities or gravel extraction, all disturbed areas shall be stabilized and re-vegetated, as appropriate. Restoration shall include the following:
  - (1) All disturbed areas shall be graded to stable slopes that blend with the natural topography;
  - (2) Erosion control measures shall be implemented as appropriate to stabilize the site; and
  - (3) Areas designated for re-vegetation shall be covered with topsoil to encourage establishment of native plant species.

Alternatively, excavated pits may be converted to fish or waterfowl habitat, with the approval of the Alaska Department of Fish and Game and the North Slope Borough. Excluded from these requirements is the portion of a gravel extraction site required to provide materials for continuing maintenance and operation. Gravel sites used for road and facility maintenance will comply with the requirements of part b) of this policy.

### **KL-20 Mining In Fish Habitat**

Sand and gravel shall not be removed from locations which have been documented to provide spawning or over-wintering habitat for anadromous fish.

**KL-21 Siting of Material Sources [Administrative Policy]**

The North Slope Borough, village of Point Lay, and applicants proposing activities that require development of new sites for extraction of sand, gravel, or other construction materials will coordinate with in the siting and operation of material sites.

**TRANSPORTATION, UTILITIES AND ENERGY FACILITIES****KL-22 Siting and Scheduling**

Transportation, pipeline, and utility facilities and corridors shall be sited, designed, and operated, using the following standards:

- a) Adverse impacts to habitats, biological resources, coastal resource uses, recreation, and the community lifestyle shall be minimized;
- b) To the extent feasible and prudent, transportation corridors and facilities shall be consolidated;
- c) To the extent feasible and prudent, road, utility, and pipeline crossings of anadromous fish streams shall be minimized and consolidated at a single location to reduce multiple impacts to an individual drainage; and
- d) Alteration or degradation of visual resources shall be minimized.

**KL-23 Geophysical Surveys**

Geophysical surveys will, to the extent feasible and prudent, be located, designed, and conducted in a manner so as to avoid disturbances to fish and wildlife populations, habitats, and harvests. Seasonal restrictions, restrictions on the use of explosives, or restrictions relating to the type of transportation utilized in such operations will be included as necessary to mitigate potential adverse impacts. Geophysical surveys in fresh and marine waters supporting fish or wildlife are required to use energy sources such as air-guns, gas exploders, or other sources that have been demonstrated to be harmless to fish and wildlife and human uses of fish and wildlife. Blasting for purposes other than geophysical surveys will be approved on a case by case basis after all steps have been taken to minimize impacts and when no feasible or prudent alternatives exist to meet the public need.

**KL-24 Planning Processes [Administrative Policy]**

The state and federal government should provide the North Slope Borough and village of Point Lay and affected landowners with the opportunity to participate in planning processes for transportation, pipeline, and utility corridors.



## 6.6 IMPLEMENTATION: KASEGALUK LAGOON AMSA

The Kasegaluk Lagoon AMSA Plan will use four major mechanisms for plan implementation:

- the consistency review conducted for projects on the Individual Project Review List
- the North Slope Borough Title 19, Land Management Regulations
- planning coordination for major projects, and
- initiation of joint planning and research programs between the North Slope Borough, the State of Alaska, federal resource agencies, and the oil and gas industry

### THE COASTAL CONSISTENCY REVIEW

As a district with a federally approved coastal management program, the North Slope Borough participates in "consistency reviews". The process of obtaining borough, state or federal permits includes review of a proposed project or activity for its consistency with a coastal management program. When an agency reviews an application for a permit, it reviews the proposed activity against its own and other regulatory requirements. This includes the policies of an approved local coastal management program, such as the North Slope Borough's coastal management program. If the proposed activity meets all regulatory requirements, including coastal management, a permit will be issued. An activity that does not meet regulatory requirements may not be approved, or approved only under certain conditions. Development cannot proceed until all required permits are issued. The North Slope Borough is one of several review agencies participating in the consistency determination process. The Borough makes a consistency recommendation to the agency coordinating permit review, which must legally address the Borough's and other consistency recommendations in making their consistency determination. Tables 6-1 and 6-2 summarize the steps and timing of a coastal consistency review for 30 and 50 day permits (for more information on implementation of the North Slope Borough Coastal Management Program, see the Coastal Management Program Implementation Manual).

The enforceable and administrative policies of the AMSA Plan are listed in Section 6.5. Once the AMSA plan receives federal approval as an amendment to the North Slope Borough Coastal Management Program, the AMSA plan policies will be used, along with the rest of the North Slope Borough coastal management policies, to determine consistency. However, the AMSA policies will apply only to activities within the AMSA boundaries.

**TABLE 6-1: MAJOR PROCEDURES UNDER THE 30-DAY SCHEDULE**

<b>STEP</b>	<b>(by day)</b>
Early contact by the applicant with district about projects	—
Applicant submits completed packet; coordinating agency distributes packet and schedule	1-2
Review period	3-17
Last day for information request via coordinating agency	15
Last day for request for public hearing	17*
Deadline for comments to coordinating agency (verbal comments must be followed up in writing within 5 days)	17
Coordinating agency develops preliminary position; notifies applicant and districts with approved programs	24
Last day for written statement requesting elevation to director level	29
If a consensus is reached, consistency determination sent to reviewers; permit decision issued within 5 days	30**
If project is elevated, issue paper sent to reviewers	+30***

\* Coordinating agency must decide within 7 days whether to hold hearing. If so, agency must provide 15-30 days of notice, and provide a summary of hearing 5 days afterwards. Parties also have the same 7 days after receipt of summary to provide additional comments.

\*\* Agency permit decision to be issued five days after consistency determination received unless statutorily impossible.

\*\*\* Elevation can take up to 15 days at each level. If no consensus reached during elevation to directors, then elevated to Commissioner for policy direction.

**TABLE 6-2: MAJOR PROCEDURES UNDER THE 50-DAY SCHEDULE**

<b>STEP</b>	<b>50 Day Schedule (by day)</b>
Early contact by the applicant with district about projects	---
Applicant submits completed packet; coordinating agency distributes packet and schedule	1-2
Review period	3-34
Last day for information request via coordinating agency	25
Last day for request for public hearing	34*
Deadline for comments to coordinating agency (verbal comments must be followed up in writing within 5 days)	34
Coordinating agency develops preliminary position; notifies applicant and districts with approved programs	44
Last day for written statement requesting elevation to director level	49
If a consensus is reached, consistency determination sent to reviewers; permit decision issued within 5 days	50**
If project is elevated, issue paper sent to reviewers	+50***

\* Coordinating agency must decide within 7 days whether to hold hearing. If so, agency must provide 15-30 days of notice and provide summary of hearing 5 days afterwards. Parties also have the same 7 days after receipt of summary to provide additional comments.

\*\* Agency permit decision to be issued five days after consistency determination received unless statutorily impossible.

\*\*\* Elevation can take up to 15 days at each level. If no consensus reached during elevation to directors, then elevated to Commissioner for policy direction.

## **NORTH SLOPE BOROUGH LAND MANAGEMENT REGULATIONS**

The North Slope Borough has adopted a local land use control and permit system called the Land Management Regulations (LMR's). The LMR's require permits for certain types of activities in the North Slope Borough. There are different categories of permits, depending on the type and the location of the activity. The LMR's also include policies to guide how development should occur. Permits are subject to compliance with LMR and coastal management policies.

AMSA Plan policies will be incorporated into the LMR permit review process in two ways. First, where an activity only requires an LMR permit, and not a state or federal permit subject to the state consistency review, the Borough will determine coastal consistency as part of the LMR process. AMSA policies will be incorporated into this review. Second, policies developed during the AMSA process may be incorporated into the LMR as new policies the next time that the LMR's are updated and revised.

## **PLANNING FOR MAJOR PROJECTS**

Certain types of activities have the potential to significantly impact coastal resources and create major changes within the AMSA. The residents of Point Lay and the North Slope Borough are anxious to participate in agency planning for large scale development projects and land management decisions. However, a consistency determination made at the time of a permit approval often takes place after the project planning process is completed. This limits consideration of local concerns at the beginning of a project. Conflicts can be avoided through village and Borough involvement early in the planning process.

There are three procedures that are strongly encouraged for major activities of area-wide concern: pre-development conferences, permit application conferences, and local partnership in planning activities. Participation in these procedures has the following objectives:

- apply coastal management policies early in project or plan development;
- address problems and potential consistency determination conflicts prior to the approval stage;
- speed up subsequent permits or approvals through resolution of issues; and
- ensure the compatibility of future planning projects with the approved coastal management program.

### Pre-development Conferences

At least 60 days prior to filing a permit application or proposing action on a disposal or management plan, parties proposing activities that are considered to be major project are strongly encouraged to present a plan for activities to the Borough Permit staff. It is recommended that developers of large industrial development projects allow a sufficient lead time between the presentation and permit application. Presentations should include a description, location, and scheduling of the proposed activities. Upon notification of intent to make a presentation, the Borough permitting staff will schedule a presentation meeting to discuss the project. The Borough will also notify and invite affected communities and major landowners to the meeting. Affected resource agencies will be notified by the permitting staff and invited to attend. After the presentation, further discussions may be held to identify issues and conflicts that need to be addressed prior to permit review and preparation of the Borough's consistency recommendation. The permitting staff will be available to work with developers in project planning as requested. The permitting staff will provide a written summary to the developer, outlining major consistency concerns. Copies will be sent to Division of Governmental Coordination and the coordinating agency. All pre-development conferences are open to the public, and public notice of the meeting will be provided.

### Permit Application Conferences

After a permit is filed or an intent of action given for activities in the major project development list, the Borough Permitting Staff will contact the coordinating agency, confirm if a conference or teleconference is necessary, and assist in its scheduling. This conference or teleconference should be scheduled no later than 10 days after notification of the action is received by the Permitting Staff, in order to stay within the Permit Review schedule. At a minimum, representatives of the coordinating agency, North Slope Borough, village of Point Lay, affected major landowners, and affected resource agencies will be invited to participate.

### Local Partnership in Planning Activities

Borough partnership in state and federal planning activities that affect allocation of coastal resources in the region is desirable. This partnership will help meet the requirements of 6 AAC 50 that state planning activities must be compatible with approved district coastal management programs.

The North Slope Borough partnership in State and federal planning activities is strongly encouraged to allow local residents to work with agency decision makers in planning for major activities. The term "partnership" is not intended to imply that the Borough would

assume equal authority in planning decisions, but to establish that there will be meaningful participation of the coastal district in the planning process. State and federal agencies are strongly encouraged to include representatives of the Planning and Zoning Commission, and major landowners in any planning teams formed to address regional planning and resource allocation.

## **FURTHER PLANNING AND RESEARCH PROGRAMS**

An intent of the AMSA process in the North Slope is to institute programs to increase understanding of resource characteristics and their importance to local residents in these areas of special interest. There is also a need to understand their sensitivity to change and impacts. The Issues and Potential Conflicts Chapter has identified research needs for certain biological, physical, and human environment characteristics. More information is necessary to more knowledgeable permitting decisions and provide for wise use of coastal resources.

The following agencies and groups have been active in sponsoring or conducting research programs to increase knowledge of areas on the North Slope:

- North Slope Borough
- Alaska Department of Fish and Game
- Alaska Department of Natural Resources
- U.S. Fish and Wildlife Service
- U.S. Environmental Protection Agency
- U.S. Army Corps of Engineers
- Minerals Management Service
- the oil and gas industry

The base of knowledge on the North Slope has benefited from these groups working together to set research priorities and scope. It would be beneficial for these same groups to continue this working relationship for projects in the Kasegaluk Lagoon area.

Given the resource characteristics and the nature of potential oil and gas and coal resource development in and adjacent to the AMSA, the following research and planning projects should receive consideration:

1. Utilization of Kasegaluk Lagoon and adjacent areas to the southwest and west by beluga whales.

2. Examination water quality and coastal processes within and adjacent to Kasegaluk Lagoon
3. Inventory of important waterbird nesting, rearing and staging habitat within the AMSA
4. Inventory of fisheries stocks, including anadromous fish distribution within the AMSA
5. Evaluation of alternative dock and road sites associated with the Arctic Slope Regional Corporation Coal Project
6. Development of effective oil spill response and cleanup measures for the ranges of weather and ice conditions likely to be encountered on offshore oil and gas leases
7. Evaluation of potential methods and routes for transporting commercial finds of oil and gas on offshore leases

**COLVILLE RIVER DELTA  
AREA MERITING SPECIAL ATTENTION**



# COLVILLE RIVER DELTA AREA MERITING SPECIAL ATTENTION

## 1.0 INTRODUCTION

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The Colville River Delta was not initially included in the concept Approved Draft of the North Slope Borough Coastal Management as a candidate for Area Meriting Special Attention (AMSA). However, the Borough has long considered the Colville River Delta as an area appropriate for nomination as an Area Meriting Special Attention. It provides important and productive habitat for many fish and wildlife species. Residents of the village of Nuiqsut and other Borough communities use the Colville River Delta throughout the year for subsistence harvest activities, particularly for fish and marine mammals. The delta and surrounding uplands have been the subject of past petroleum exploration activities, with three wells drilled and fourth proposed for this winter. There is speculation that a potentially commercial quantity of oil was discovered during drilling. The Colville River Delta is roughly three miles from the boundary of the Kuparuk field, and is included in a state oil and gas lease sale, scheduled for June of 1991.

### 1.1 AMSA Primary Value and Basis for Candidacy

#### 1. AMSA Primary Value and Basis for Candidacy

a. Primary Values: Important habitat for marine, freshwater, and anadromous fish; Important habitat for waterbirds; subsistence activities, including harvest of fish and wildlife resources, location of subsistence hunting and fishing camps, and access to resources and camps; gravel deposits and potential onshore and offshore deposits of oil and gas; and research activities.

As the major river system on the North Slope, the Colville River and its delta support over 20 species of fish, providing habitat for migration, spawning, rearing, feeding and overwintering.

The Colville River Delta provides essential nesting, rearing and migratory staging habitat for numerous species of waterbirds.

Numerous marine mammals migrate through the waters offshore from Cape Thompson. These species include the bowhead whale, gray whale, beluga whale, walrus, polar bears, and ringed, spotted, and bearded seals.

The Colville River Delta area has been traditionally utilized as a subsistence hunting and gathering area, and has been a traditional site of encampment by coastal Inupiat groups. Current subsistence activities occur throughout the Colville River Delta Area.

b. Basis for Candidacy: AS 46.40.210 (1), (A), (B), (E), (F), (G) and 6 AAC 80.160(b)(1), (2), and (3).

- Area of unique, scarce, fragile, or vulnerable natural habitat, cultural value, historical significance, or scenic importance;
- Area of unique geologic or topographic significance which is susceptible to industrial or commercial development;
- Area of significant hazard due to storms, slides, floods, erosion, or settlement;
- Area needed to protect, maintain, or replenish coastal land or resources, including coastal floodplains, aquifer recharge areas, beaches, and offshore sand deposits;
- Area important for subsistence hunting, fishing, food gathering, and foraging; and
- Potential estuarine or marine sanctuary.

## 2. Geographic Orientation

a. Coastal Region: Arctic

b. Local Orientation: North Slope Borough - Mid-Beaufort coastal sector.

The Colville River Delta is located at the mouth of the Colville River. It is located approximately 160 miles southeast of Barrow. The Colville River Delta extends approximately 30 miles up river from its confluence with the Beaufort Sea to Ocean Point.

c. Coordinates:

Latitude	70 05' to 70 30'N
Longitude	151 15' to 151 45'W

d. USGS Quadrants: 1:250,000 Harrison Bay, Beechey Point

## **1.2 CHAPTER ORGANIZATION**

The Phase 1 Report of the Colville River Delta AMSA contains the following Sections:

- 1.0 Introduction
- 2.0 Resource Inventory
- 3.0 AMSA Boundary
- 4.0 Issues and Conflicts

## **2.0 AMSA BOUNDARY: COLVILLE RIVER DELTA**

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### **2.1 INTRODUCTION**

Standards for the Alaska Coastal Management Program, 6 AAC 80.160(2), requires that nomination for an AMSA include the following information:

*a map showing the geographical location, surface area, and if appropriate, bathymetry of the area, along with a legal and narrative description of the boundaries and a justification of the size of the area which merits special attention*

- The boundaries reflect the reasons, resource values, and potential conflicts used in nominating the Colville River Delta as an AMSA. These include the following:
- the unique habitat provided by the Colville River Delta,
- nearshore waters, riverine, lake and inland areas of important habitat for water-birds, caribou, marine mammals, and anadromous fish resources utilized by residents of Nuiqsut
- areas where resource development has potential to directly affect coastal resources within the AMSA, including gravel and oil and gas development

These boundaries are drawn to allow a comprehensive management approach to the AMSA involving the appropriate resource users and local, state, federal and private resource managers.

### **2.2 AMSA BOUNDARY: COLVILLE RIVER DELTA**

Map 2-1 shows the boundaries of the Colville River Delta AMSA. This AMSA lies within two USGS quadrants: 1:250,000 Harrison Bay and Beechey Point. Coordinates are 70 05' to 70 30'N Latitude, and 151 45' to 151 15'W Longitude. The boundaries stretch along the mouth of the Colville River Delta from the mouth of Kalubik Creek on the eastern boundary of the AMSA, west to the township 13N and Range 1E, past the mouth of the Tingmæachsiyvik River. They extend up the Colville River to Ocean Point and include parts of Fish Creek and the Ublutwoch River drainages to the west of the . The boundaries of the Colville River Delta AMSA include:

- state waters to three miles offshore of the AMSA;
- a one mile corridor up the eastern side of the Colville River, from the mouth of Kalubik Creek to Ocean Point;
- the entire delta between the eastern-most channel and the Nechelik channel of the Colville River

- a one mile corridor downstream the western bank of the Colville River from Ocean Point to Township 9N, Range 4E

The Colville River Delta AMSA lies entirely within the boundaries of the federally approved North Slope Borough Coastal Management Program.



## **3.0 RESOURCE INVENTORY: COLVILLE RIVER DELTA**

The Colville River has built a large Delta at its mouth, measuring nearly 21 miles long and 20 miles wide. The area is dotted with numerous wetlands, ponds and lakes, as well as active dune deposits. In addition to the dozens of distributary streams and channels that form a maze of waterways, there are three major channels of the Colville River in the Delta. The main channel follows the eastern margin of the river, breaking into two channels around a large island 8 miles north of the head of the delta. The left-hand fork is called the Kuukpiguag Channel. The Necheik Channel (also known as the Nigliq channel), the westernmost channel, is approximately 20 miles long and connects into the channel at the head of the Delta.

### **3.1 BIOLOGICAL RESOURCES**

#### **3.1.1 FISHERIES RESOURCES**

##### **INTRODUCTION**

Fish populations in the Colville River and delta have received increasing attention as a result of increased resource use and industrial development in the area. A number of surveys have been conducted since 1970, primarily to describe fish use of the Colville drainage and surrounding water bodies (Kogl 1971, Ait and Kogl 1973, Kogl and Schell 1974, Bendock 1979 to 1983, Bendock and Burr 1984a). A summary of freshwater fish distribution and habitat use between the Ikpikpuk and Colville rivers was also recently produced (Bendock and Burr 1984b). Two studies of fish use in the lower Colville River and delta region were conducted in 1985 (Fawcett et al. 1986, Bendock and Burr 1986). Research activities prompted by oil and gas leasing and development in the coastal region have provided substantial information on anadromous fish utilization of coastal habitats in the Colville River area (Craig and Halderson 1981, Dew 1983, Schmidt et al. 1983, Moulton and Fawcett 1984, Fawcett et al. 1986).

The studies conducted to date indicate that the Colville River supports an abundance of fish, composed of at least twenty species, which are dominated by whitefishes and ciscos (Table 3-1). Char and Arctic grayling are also abundant. Eight marine species have been documented in adjacent coastal waters. Twelve species found in the Colville River use the Beaufort Sea coastal region to varying degrees, ranging from salmon and smelt, which return to the river only to spawn, to humpback whitefish and broad whitefish, which move into the estuary to feed during the summer, but return to the river to overwinter and spawn.

Table 1. Catch contribution by species as observed during fisherman interviews, by percent contribution of village catch (does not include commercial fishery).

Delta Species	Nigliq Channel			Outer Colville		
	1985	1986	1987	1985	1986	1987
Arctic cisco	69.5%	95.9%	71.8%	62.1%	74.6%	75.1%
Least cisco	14.8	3.8	18.7	37.0	24.4	21.5
Broad whitefish	15.1	0.3	5.5	0.1	0.007	0
Humpback whitefish	0.5	0.03	3.8	0.7	0.9	1.4
Rainbow smelt	0.2	0.04	0.01	0.1	0.1	2.0
Round whitefish	0	0.01	0	0	0	0
Dolly Varden char	0	0	0.03	0	0.007	0
Saffron cod	0	0	0.04	0	0	0
Burbot	0	0	0.06	0	0	0
Fourhorn sculpin	*	*	*	*	*	*
Total Examined Catch	2,708	8,952	6,826	5,510	15,328	6,190

\* Fourhorn sculpin always present but not counted



Residents within the Colville Delta harvest a variety of fish for both subsistence and commercial use (George and Kovalsky 1986, George and Nageak 1986, Moulton et al. 1986b, Moulton and Field 1988). Sport harvests are presently light. The subsistence harvest consists of a variety of species, including ciscos, whitefishes, char, lake trout, grayling and burbot (Moulton et al. 1986). All except lake trout are commonly caught within the lower river and delta. Broad whitefish is the primary species taken during the summer subsistence fishery, while Arctic cisco is the target species in the fall (George and Nageak 1986, Moulton and Field 1988). The commercial fishery targets primarily on Arctic cisco, with least cisco, broad whitefish and humpback whitefish also taken.

The biological information on Colville River fishes is fragmentary and a complete description of the populations and habitat use patterns does not exist. The objective of this section is to present a review of existing information on eight of the dominant fish populations so that information needs can be identified. The geographic area covered by the data review is the area between Ocean Point and the mouth of the Colville River, including the lower portion of Fish Creek (Map 2-1).

## SPECIES DESCRIPTIONS

### Arctic Cisco (Qaaktaq)

In coastal areas of the Beaufort Sea near the Colville River, Arctic cisco is one of the most abundant species present during the open water season, often representing 30 to 50 percent of the anadromous fish captured by gill net or fyke net (Bendock 1977, Craig and Halderson 1981, Dew 1983, Moulton and Fawcett 1984). It is abundant in river deltas as well, accounting for 13 percent of the catch of anadromous fishes in the Colville Delta in 1985 and 29 percent of the catch by fyke nets at the Sagavanirktok River in 1982 (Griffiths et al. 1983, Fawcett et al. 1986). Arctic cisco is the dominant species in the commercial catch in the fall fishery at the Colville River Delta with a mean catch of about 27,000 fish per year over the last 2 years (Table 2). Based on studies to date, the distribution of Arctic cisco in the Colville River appears to be confined to the lower river and delta area downstream from Ocean Point.

Arctic cisco found in the Colville River appear to originate from spawning stock in the Mackenzie River (Gallaway et al. 1983, Moulton 1989). Young-of-the-year Arctic cisco from the Mackenzie Delta move westward into the Alaskan Beaufort Sea during late July to early August, particularly during years with predominantly easterly winds (Fechhelm and Fissel 1988). The young fish take up residence in river deltas and spend the next seven to eight years rearing in the coastal region and wintering in the delta. At maturity, the remaining Arctic cisco migrate back to the Mackenzie River to spawn.

Table 2. Total estimated catch of Arctic cisco and least cisco in the Colville Delta fall fishery, 1985-1987.

Area	Arctic Cisco			Least Cisco		
	1985	1986	1987	1985	1986	1987
Niglig Channel (all village catch)						
Upper Niglig	17,878	8,238	10,331	1,871	1,329	4,480
Nanuk	--	4,636	3,310	--	440	124
Niglig Delta	8,500	5,924	2,635	0	38	74
Outer Colville Delta						
Main Channel						
Village	12,397	14,724*	4,571*	8,698	4,998*	1,433*
Commercial	10,321*	1,839*	0	8,657*	578*	0
East Channel						
Village	7,906	0	0	5,245	0	0
Commercial	13,357*	27,617*	27,494*	9,939*	8,422*	11,939*
Total	70,359	62,978	48,341	33,410	15,505	18,053

\* Entire catch counted

The success of the westward migration appears to be highly dependent on the duration and intensity of easterly winds during July and Early August. In years with persistent easterly winds, the recruitment of young into the Colville Delta is strong, in years with more westerly winds, few young Arctic cisco arrive. This pattern creates extreme cycles of abundance for this species in the Colville region, which in turn is reflected in the catch patterns when the fish reach harvestable size.

#### Least Cisco (*Osmerus*)

Least cisco are common throughout the Colville River drainage and coastal plain lakes and streams (Bendock 1979, 1982, Bendock and Burr 1984a, McElderry and Craig 1981). Two life history types exist in the area. Some least cisco populations are anadromous while others are lake dwellers and never leave fresh water. In the nearshore coastal areas and lagoons, least cisco is one of the three most abundant anadromous fish species, along with Arctic cisco and char, during the open water season (Kogi 1971, Furniss 1975, Craig and Halderson 1981, Dew 1983, Schmidt et al. 1983, Moulton and Fawcett 1984, Fawcett et al. 1986). Least cisco in these coastal regions are assumed to originate in the Colville River since no rivers between the Colville and Mackenzie rivers are known to support spawning populations of least cisco.

In 1985, least cisco represented 60 percent of the anadromous fish catch in fyke nets in the outer delta region and 48 percent of the catch in lower river nets (Fawcett et al. 1986). During the same year, Bendock and Burr (1986) reported least cisco were the most numerous fish captured in the lower 60 miles of the Colville River. Least cisco was the most abundant species found in surveys of lakes and streams north and west of the Colville River (McElderry and Craig 1981, Bendock 1982, Bendock and Burr 1984a,b). They are the second most abundant species taken in the fall commercial fishery in the Colville Delta, with an average annual catch of 21,000 fish per year.

Least cisco spawn in freshwater in late September and early October (Morrow 1980). Spawning area in the lower Colville River were located by McElderry and Craig (1981). As many as 75 to 86 percent of the least cisco collected downstream from Ocean Point in summer and fall were ripe or spent (Alt and Kogi 1973, McElderry and Craig 1981). Spawning least cisco were found in the channel near Nuiqsut during early October in 1985 to 1987 (Moulton and Field 1988). The lower Colville River (between Ikilik River and Ocean Point) and delta apparently contain the most important spawning area for anadromous least cisco.

Least cisco overwinter in the delta and lower river in brackish to fresh water. They appear to utilize lower salinity water than do Arctic cisco and may move upstream to avoid high

salinity water (greater than 20 ppt). They appear to be most abundant in water less than 15 ppt (Moulton and Field 1988).

Following breakup, least cisco move from overwintering areas in the delta into feeding areas in the brackish coastal waters of Harrison Bay, Simpson Lagoon, and eastward past Prudhoe Bay (Craig and Halderson 1981, Griffiths et al. 1983, Moulton et al. 1988, Cannon et al. 1987). They return to the Colville Delta around the third week of August (Moulton and Fawcett 1984, Fawcett et al. 1986).

### Broad Whitefish (Anaakliq)

Broad whitefish are distributed throughout the Colville River drainage and coastal plain water bodies and are common in coastal waters in the vicinity of the Colville Delta. During the summer open-water season, broad whitefish are found in the delta, main river channel and main tributaries (Kogl and Schell 1975, Bendock 1979, 1982, Bendock and Burr 1984a, 1986, Fawcett et al. 1986). Highest abundances in coastal marine waters are near river deltas (Furniss 1975, Griffiths et al. 1983, Schmidt et al. 1983, Moulton and Fawcett 1984, Moulton et al. 1988) although tag returns show that large fish may move at least between the Colville River and Prudhoe Bay region. Broad whitefish show a strong preference for nearshore habitats when in coastal waters, appearing only rarely in offshore or barrier island locations (Craig and Halderson 1981, Crichtlow 1983, Craig 1984, Moulton et al. 1986). Juvenile broad whitefish rear in isolated backwaters, oxbows, and other low velocity areas throughout the lower river and delta.

Broad whitefish were the second most abundant anadromous fish caught in outer Colville Delta fyke nets during 1985, representing 15 percent of the anadromous fish catch (Fawcett et al. 1986). During the same year, they were also the second most abundant fish caught in gill sampling throughout the lower river and delta (Bendock and Burr 1986).

Following a summer of foraging in coastal and delta areas, broad whitefish migrate upstream of Ocean Point, although some broad whitefish spawn within the delta (Kogl and Schell 1975, Bendock and Burr 1986). Spawning occurs in September and October. Age to first maturity is at age 9, with most of the fish becoming mature around ages 10 to 12 (Bendock and Burr 1984b, 1986).

The main overwintering areas are likely upstream from the Itkillik River. Most broad whitefish leave the delta after ice forms and likely move upstream beyond the influence of salt water. Few broad whitefish are caught in the delta during the fall fishing period, with the highest catches occurring in early October and decreasing rapidly thereafter (Moulton and Field 1988).

### Humpback Whitefish (Pikutuuq)

Humpback whitefish are spread throughout the lower Colville River and delta during the summer with some portion of the population entering coastal waters to feed. A few humpback whitefish move through Simpson Lagoon to Prudhoe Bay during the summer feeding period (Craig and Halderson 1981, Moulton et al. 1986a). During sampling in 1985, humpback whitefish comprised 35 percent of the catch (second in abundance) of anadromous fish in fyke nets in the lower river and 9 percent of the catch (fourth in abundance) in outer delta fyke nets (Fawcett et al. 1986). Humpback whitefish were also fourth in abundance for fish captured by gill net in the delta region during the same year (Bendock and Burr 1986).

Many humpback whitefish appear to spawn in the upper Colville River (upstream from Umiat) during September and October (Alt and Kogi 1973, Bendock 1979, Kogi and Schell 1975). Spawning also occurs in the Colville Delta and throughout the lower Colville River at the same time (Kogi and Schell 1975). Humpback whitefish may be the most abundant species in some Colville Delta channels during the spawning season, with higher abundance in the deeper Kupiguak Channel than in the East Channel (Kogi and Schell 1975). As with broad whitefish, the age at first maturity is age 9, with most fish maturing at ages 10 to 12.

Humpback whitefish likely overwinter throughout the lower Colville River and delta, although specific information on overwintering areas is limited. Adult humpback whitefish, including spent fish, are predictably captured near the confluence of the Kupiguak and East Channels of the outer delta in October and November during the fall fishery. It is not known if these fish remain in this location during the winter or if they move upstream as the salinity in the delta increases.

### Char (Iqalukpiq)

Char are distributed widely in the Colville River drainage, including major tributaries and smaller tributaries and lakes upstream from and including the Anaktuvuk River (Kogi 1971, Bendock 1979, Morrow 1980). The lower river and delta region are used as a migratory pathway for anadromous char to move between feeding and overwintering and spawning areas. Residence time within the delta and lower river is low because of the migratory nature of this species. During 1985, char comprised 2 percent of the anadromous fish catch in lower river fyke nets and less than 1 percent of the catch in delta fyke nets (Fawcett et al. 1986).

Char overwinter far upstream of Ocean Point in spring-fed mountain streams. Following breakup in June, they move rapidly to coastal waters to feed along the barrier islands.

Pre-spawning adult char return to the river in early to mid August, with non-spawning adults and juveniles returning later in August and early September.

### Rainbow Smelt (Ilhaugriq)

Rainbow smelt are an anadromous species that remains in marine water during the winter rather than entering a river to overwinter. The Colville River apparently supports a substantial population of rainbow smelt, because they are often abundant in summer catches in and adjacent to the Colville Delta (Dew 1983, Moulton and Fawcett 1984, Fawcett et al. 1986). Rainbow smelt are abundant in the Colville Delta during the winter when salinity increases beyond about 20 pt and are often caught incidentally during the fall fishery. They appear to move in and out with higher salinity water and are rarely caught when salinity is less than 15 ppt.

In contrast to other anadromous fishes in the arctic, rainbow smelt spawn in the spring (Morrow 1980). Spawning fish move from marine water into the Colville Delta as soon as breakup occurs or while ice is still present (Morrow 1980, Craig and Haldorson 1981, Nikolski 1961). Spawning areas must have gravel or stones for attachment of eggs. Specific spawning areas for rainbow smelt in the Colville River are not known but are likely near the mouths of streams or lakes that are connected to the main channels, or other similar areas that are likely to contain pockets of clean gravel or sand.

The population of rainbow smelt in the Colville River is slow-growing and long-lived compared to populations in more southerly locations. Maturity is reached at 5 years for males and 5 to 7 years for females, compared to 2 years on the east coast of Canada and Maine. Rainbow smelt in the Colville River reach 13 to 15 years of age (Craig and Haldorson 1981), compared to maximums of 5 to 6 years in southern populations.

### Arctic Grayling (Sulukpaugaq)

Arctic grayling is one of the most abundant and widespread fish species in the Colville River upstream from the confluence of the Nigliq Channel and the main river channel. Grayling are abundant in the main river channel as well as in major and minor tributaries and lakes (Bendock 1979, Kogi 1971). Arctic grayling are caught incidentally in coastal waters, usually in early summer in association with periods of low salinity (Craig and Haldorson 1981, Dew 1983, Moulton and Fawcett 1984).

Arctic grayling spawn throughout the Colville River drainage. Tributaries provide the primary spawning habitat in the lower reaches. Spawning commences in the second week of June and can extend to as late as the second week of July. Age at first maturity is 4 to 6 years (Bendock and Burr 1984b).

Overwintering occurs in the mainstem of the Colville River, often near the mouths of tributary streams or in deep areas. Overwintering is primarily upstream from the delta region, since Arctic grayling avoid saline water.

### Burbot (Tittaaq)

Burbot is a freshwater species abundant in the lower Colville River (Bendock 1979). It is also found in the delta throughout the year (Furniss 1974, Kogi and Schell 1975, Bendock 1979). Burbot are rarely report in coastal waters and are apparently intolerant of high salinity (Griffiths and Galloway 1982, Moulton et al. 1986a).

Burbot overwinter in many of the deep holes along the main Colville River and near tributary mouths where other species congregate. Spawning occurs in mid winter, likely in January and February. One area near Nuiqsut that is fished through the winter may represent both a spawning and overwintering area, since large burbot are consistently caught there in mid-winter.

## LOWER RIVER AND DELTA HABITATS

The lower Colville River and delta is composed of a complex maze of interconnected main and minor channels, with numerous oxbows and lakes. The lakes are composed of permanently, seasonally and sporadically connected lakes. Seasonally connected lakes are those that become flooded during breakup while sporadically connected lakes are those that become connected only during high water years. The diversity of aquatic habitats provides substantial rearing, migration, overwintering and spawning habitat for the fishes found within the delta and lower river.

### Main Channel Habitat

Main channel habitat is composed primarily of the main Colville River between Ocean Point and the mouths of the Kupignuak and East channels, and the Nigliq Channel. These channels convey most of the flow during the summer and hold substantial volumes of water during the winter. The main value of the main channel habitat is as overwintering habitat, spawning habitat and migration corridors.

Much of the main channel habitat is in excess of 10 to 12 feet deep, which ensures abundant overwintering habitat throughout much of the delta. The water in these channels becomes saline as flow reduces after ice formation in the fall and marine water penetrates into the delta to replace the freshwater. Species that are tolerant, or dependent, on brackish water utilize the lower portions of the delta for overwintering, while species less tolerant to salinity move upstream to fresher water. There is thus a segregation of winter

habitat use within the delta. Salt tolerant species found in the lower delta include Arctic cisco, rainbow smelt and fourhorn sculpin. Species with moderate salinity tolerance appear to include least cisco and humpback whitefish. Other species, including broad whitefish, Arctic grayling and burbot move upstream of the brackish water, which in many years moves upstream as far as the Itkillik River. The river reach between Itkillik River and Ocean Point thus provides the first significant freshwater overwintering areas.

Broad whitefish, humpback whitefish and least cisco all appear to spawn in main channel areas prior to overwintering. Least cisco appear to move downstream into the delta after spawning is completed, while the other two species remain near the spawning areas.

### Minor Channels

There are numerous minor distributary channels that lace the delta. In total, these convey a substantial amount of water during the spring, but have very low flow during the summer. Because of the low summer flow and shallow water, these channels warm rapidly and provide abundant rearing habitat. There is scant information on fish use of these habitats, but it is likely that young cisco and whitefishes are abundant.

### Delta Lakes

Delta lakes provide a substantial amount of freshwater habitat throughout the delta. There are several types of lakes, based on the extent to which they are connected to an active channel. Some lakes have defined connecting channels, through which fish can pass throughout the summer. Others are not connected, but are of such low elevation that they are connected every spring during the break-up flows. Still others are flooded infrequently during unusually high water.

Delta lakes provide substantial habitat for a variety of fish and life stages. Connected lakes are heavily used for rearing. Broad whitefish commonly use these areas, and some fishermen traditionally harvest broad whitefish from large connected lakes. Least cisco, Arctic grayling and humpback whitefish also use these as rearing areas. Lake resident forms of least cisco and broad whitefish typically utilize the unconnected lakes, although other species, including humpback whitefish, Arctic cisco and Arctic grayling, are also found in these habitats. Use by species other than least cisco and broad whitefish tends to be higher in lakes that are flooded annually than those that are flooded less frequently.



### 3.1.2 WILDLIFE RESOURCES

Wildlife communities on the Colville River delta are characterized by high abundance of individuals yet a relatively low number of species in comparison to communities in more southern latitudes. The avian community has been the focus of numerous investigations due to the unique assemblage of species and habitats found in the delta (Hall 1975; Gilliam and Lent 1982; Connors et al. 1983; Divoky 1983; Johnson et al. 1983). Recently, due to the potential for oil and gas development in the Delta, the U. S. Fish and Wildlife Service conducted a two year investigation of the birds and habitats that are present (Meehan and Jennings 1988). Investigations of terrestrial mammals have focused on the movement and distribution of caribou (ADF&G 1987).

Investigations of birds on the Colville River delta have included aerial surveys of tundra swans (Welling and Sladen 1978), distribution and behavior of brant (Shepard 1960; Simpson 1984), and ground-based surveys of waterfowl, shorebirds, larids, and passerines (Griffin 1948; Nelson 1949, 1950, 1951, Kessel and Cade 1958; King 1973; Hall 1975). More recent investigations have included density and species composition of breeding birds in different physiographic units of the delta (Rothe et al. 1983), behavior of tundra swans (Rothe and Hawkins 1982; Hawkins 1986), habitat use by yellow-billed loons (North 1986) and breeding ecology and distribution of brant and greater white-fronted geese (Simpson and Pogson 1982; Simpson et al. 1982; Renken et al. 1983; North et al. 1984).

Geobotanical maps of the delta have been prepared by USFWS and by the North Slope Borough. Rothe et al. (1983) mapped vegetation types at a scale of 1:30,000. Vegetation and land forms were mapped by the Borough at a scale of 1:250,000 and are included in the Geographic Information System.

### HABITATS

Characteristic of the terrestrial vegetation communities along the North Slope Coastal Plain, the Colville delta hosts a low diversity of species yet an abundance of individuals. The area is typified by little topographic relief, resulting in extensive areas of wet and moist tundra communities. Many shallow lakes and ponds have formed in the low-lying areas while peat ridges and polygonal features related to frost action and ice wedges provide slightly higher and better drained soils. Few woody plants are present, but those that do survive occur on the drier sites where the micro-relief raises them above the standing water table during the growing season. By far, the dominant species of vegetation growing throughout the Colville delta is water sedge (*Carex aquatilis*).

The dominant vegetative communities of the Colville delta are characterized in the following sections.

### Coastal Brackish Marshes

These communities occupy low-lying areas generally within about 0.5 miles of the Beaufort Sea coast. They are occasionally flooded by sea water, usually as a result of high storm surges. Typically, coastal marshes are composed of numerous small, shallow ponds interspersed with meadows of *Puccinellia phryganeoides* and *Carex subspathacea*. These plants which dominate the local vegetation, frequently grow in pure stands.

### Freshwater Marshes

These communities most likely comprise the largest surface coverage of vegetated areas within the Colville delta. They also contain the greatest internal diversity in sub-types. Rothe et al. (1983) described seven different freshwater marshes in the Colville delta. Sub-types were separated based primarily upon water depth, duration of water cover, and vegetation characteristics. Using this classification scheme, the freshwater marsh sub-types that are most common in the Colville delta are:

- flooded tundra,
- shallow *Carex*,
- deep *Arctophila*, and
- basin-complex.

Flooded tundra communities are dominated by a full ground cover of *Carex aquatilis* and typically contain shallow, standing water only during, and immediately after, breakup. Shallow *Carex* communities typically contain shallow ponded water throughout the growing season and are dominated by emergent *Carex aquatilis*. Deep *Arctophila* communities frequently occur along the shorelines of larger ponds and lakes, or inactive stream channels. *Arctophila fulva* is the dominant emergent plant in these communities. Basin complex communities typically contain a variety of wetland types each with their characteristic vegetation, however, stands of emergent *Carex aquatilis* and *Arctophila fulva* again dominate.

### Moist-Upland Tundra

These communities occur most frequently in the southern portion of the Colville delta in areas where slightly elevated terrain provided better local drainage. In these upland tundra communities, soil moisture is usually the most important factor controlling vegetation. In the drier areas species diversity typically increases, however, *Dryas integrifolia* is the most

common species. In regions where soils are still well-drained, but soil moisture remains high, sedges and cottongrass (primarily *Carex aquatilis* and *Eriophorum angustifolium*) dominate.

## BIRDS

Birds are the most abundant class of wildlife in the vicinity of the Colville delta. Numerous studies have been conducted on the bird populations of the coastal plain including Meehan and Jennings 1988, Hall 1975, Gilliam and Lent 1982, Connors et al. 1983, Divoky 1983, and Johnson et al. 1983. These reports document that about 150 species of birds occur in this area. Investigations in the Colville delta have established that 38 species of birds occur regularly during the summer season. The number of species present and their location is dependent upon the time of year, and specific habitat characteristics. In general, most species are present between May and September. Only rock and willow ptarmigan, snowy owls, and ravens are commonly seen during the winter.

Spring migration and arrival begins the annual bird activity in the Colville delta. In mid- to late-May, after the initiation of breakup, the waterfowl (including pintails, mallards, white-fronted geese, brant and tundra swans) and sea birds (particularly eiders and oldsquaw) begin to arrive from their respective wintering areas. Utilizing open water in leads and nearshore areas and available snow-free tundra, these birds conduct an intensive feeding period concurrently with courtship, nest building, and mating. The shorebirds generally arrive within a week or two after the waterfowl species and, almost immediately, begin to establish territories and nest sites. Common shorebirds include red and red-necked phalaropes, semipalmated and pectoral sandpipers, dunlin and American golden and black-bellied plovers.

The second major event is nesting. A wide variety of waterfowl, shorebirds, and passerine birds move into the area during June and establish territories. Drained-lake basin complexes, deep *Arctophila* and flooded *Carex* wetland types are particularly important nesting habitats for the waterfowl and most shorebirds. Plovers, ptarmigan and longspurs on the other hand prefer to establish nesting territories in upland tundra habitats. The beginning of the incubation varies each year for each species. Tundra swans and Lapland longspurs are generally among the earliest while the Arctic loon and the red-throated loon are among the last species to begin incubation. Although the length of incubation varies, most species have finished nesting by the third week of July. During a typical year, semipalmated sandpipers, Lapland longspurs, pectoral sandpipers and northern phalaropes are among the common nesting species.

The third event is the molt. Shortly after nesting, the waterfowl and seabirds undergo a complete synchronous molt, when they lose primary wing feathers and are flightless. The

shorebirds will also molt shortly after nesting but retain the ability to fly throughout the molting process. Because flightless waterfowl and seabirds are more vulnerable to predation, they usually seek the security of lagoons, lakes and offshore areas.

During the molt, which occurs between mid-July and mid- to late-August, large numbers of oldsquaw and black brant concentrate in Simpson Lagoon immediately north of the Colville delta. Also, large groups of white-fronted geese may be seen on the larger lakes throughout the Colville delta during their molt (typically early- to mid-August).

Fall staging, the final annual event, is the aggregation of individuals into large flocks prior to the fall migration. During this period, relatively few birds are present in inland portions of the Colville delta; however, thousands of waterfowl, phalaropes and seabirds congregate on and near the Beaufort Sea coastline and lagoons. Oldsquaw are, by far, the most abundant bird occurring along nearshore areas at this time.

## MAMMALS

Eighteen terrestrial mammals are reported to occur in the inland environment between the Colville and Kuparuk Rivers (Seaman et al. 1981). While most of these species probably occur in the Colville delta, caribou, arctic fox and (during high years) brown and collared lemmings are typically most abundant. Caribou of the Central Arctic Herd, that winter in the foothills of the Brooks Range, migrate to the coastal plain in May. Most follow river drainages during this migration. In the vicinity of the Colville delta, inactive floodplains of the river as well as adjacent uplands are used as a major migration path for movement to and from the coast (Cameron et al. 1981).

During late-May through mid-June, pregnant cows isolate themselves from bulls and yearlings for parturition. Calving is usually completed by mid-to late-June. The Central Arctic Herd typically uses the coastal plain as traditional calving grounds, although there can be large variation in the calving area from year to year (Cameron et al. 1981). In recent years, the population size of the herd has been increasing. Although calving occurs on the delta, the principal calving areas for the Central Arctic Herd are located east of the Colville River.

During warm, calm days in summer when insect harassment is high, large numbers of caribou move to the coast. The coastal breeze provides the caribou with relief from insect harassment. Once on the coast the caribou move into the wind to further reduce harassment. When warm, calm conditions cease, caribou disperse inland.

The Arctic fox is ubiquitous in the Beaufort Sea coastal area, including the Colville delta. In the spring, the adults select a den site, usually in an area with well drained soils. Because arctic fox do not necessarily use the same den in successive years, either an already constructed den is selected or a new one is excavated.

Although lemmings are the most abundant rodent on the coastal plain, populations of brown and collared lemmings remain at relatively low densities in the vicinity of Prudhoe Bay as compared to other areas of the North Slope (Faist 1975; Underwood 1975). Faist suggested that lemmings may compete with caribou for food resources. He also suggested that fluctuations in the lemming population observed on the coastal plain near Barrow may not occur in the mid-Beaufort area.

## **3.2 HUMAN RESOURCES**

### **3.2.1 Community Setting: Nuiqsut**

The present village of Nuiqsut is located towards the base of the Colville River Delta, 30 miles inland from the Beaufort Sea. It is due south of Niglik, a historical coastal trading site of Inupiat people who lived both along the Arctic coastal and inland in the Brooks range. Prior to the 1950's, there had been a fairly large Native population along the lower Colville River, and even after that period, families and individuals maintained hunting and fishing camps in the area. Nuiqsut was resettled in April of 1973 by 27 families from Barrow, many of whom had lived in the Colville River area some 25 to 30 years earlier. There were many reasons behind the resettlement of Nuiqsut. The community was established in the midst of an area rich in hunting and fishing resources by a people with a strong orientation towards the land and its resources. The Alaska Native Claims Settlement Act (ANCSA) had an influence; in March of 1973, an ANCSA Native village corporation for Nuiqsut (the Kuukpiik Corporation) was established by residents living in Barrow, with a shareholder enrollment of 207. The Nuiqsut townsite was selected and laid out with the assistance of the Arctic Slope Regional Corporation, and the corporation further encouraged the resettlement of this community by assisting with funding of new housing.

Nuiqsut was incorporated as a second class city in 1975, and has municipal boundaries which contain an area of approximately 9 square miles. Figure 3-1 shows the layout of the village of Nuiqsut.

### **3.2.2 Population and Employment Characteristics**

The North Slope Borough completed a population census of Borough villages in the spring of 1988. Table 3-1 presents 1988 population characteristics for the village of Nuiqsut, which is the fourth largest village after Barrow, Point Hope, and Wainwright. The 1988

# NUIQSUT, ALASKA

SCALE 1"=500'

(Legend)

## NAB REAL PROPERTY

1. Airport Terminal 1/2
2. Warm Storage & Drop
3. Old School Complex
  - a. Classroom #1
  - b. Multi-Purpose Room
  - c. Primary Classroom
  - d. Generator Shed #1
  - e. Storage Shed #1
  - f. Storeroom #1
  - g. Teacher Housing #1
  - h. Teacher Housing #2
  - i. Teacher Housing #3
  - j. Storage Garage #1
4. Health Clinic
5. Fire Station
6. Public Safety 48'x12'
7. Teachers Four-Play
8. NAB House
9. School Classroom
10. School Shop
11. School Gym
12. Generator Facility
13. Water Treatment Fac.
14. Tank Farm
15. Control Bldg Office
16. QATV Broadcast Bldg
17. USO H

NAB PLANNING/CES  
MARCH 31, 1988

TABLE 3-1

AGE, SEX, AND RACE COMPOSITION OF POPULATION  
NUNQSUT

	INUPIAT			NON-INUPIAT			TOTAL			% TOTAL
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	
UNDER 4	18	18	36	0	0	0	18	18	36	11.9%
4 - 5	30	18	48	0	0	0	30	18	48	15.9%
6 - 15	11	23	34	0	0	0	11	23	34	11.3%
16 - 17	3	1	4	0	0	0	3	1	4	1.3%
18 - 25	30	28	58	8	9	17	38	29	67	19.2%
26 - 39	28	19	47	5	2	7	33	21	54	17.2%
40 - 59	27	16	43	5	5	10	32	21	53	17.5%
60 - 65	2	1	3	2	0	2	4	1	5	1.7%
66 +	3	9	12	0	0	0	3	9	12	4.0%
TOTAL	150	133	283	12	7	19	162	140	302	100.0%
%	49.7%	44.9%	48.2%	4.0%	2.3%	6.2%	53.8%	46.4%	49.0%	

NUMBER OF MISSING OBSERVATIONS

TOTAL POPULATION

AVERAGE AGE  
(years)

ENTIRE POPULATION 26

MALE 25.3

FEMALE 24.7

INUPIAT 23.6

NON-INUPIAT 45.8

Source: NSB Census of Population and Economy, 1990.

population was 314, 93.7% of whom were Inupiat. Males slightly outnumbered females, 53.8% to 46.4%. The population was relatively young, with an average age of 25 and 59.6% of the population 25 or younger. Between 1980 and 1988, the population increased 24.8%, from 252 to 314.

There were 81 households in Nuiqsut in 1988; average household size was 3.9 persons. The median and average household incomes were \$35,000 and \$41,136.

Tables 3-2 and 3-3 show occupation and industry composition of employment in Nuiqsut. Total employment in the village increased sharply from 98 to 145 between 1980 and 1988. An increase in employment by the North Slope Borough government accounts for much of the total increase in employment. In 1988, the Borough accounted for 63.7% of employment within the community, including school district employment. Native corporations and their affiliates accounted for 15% of total employment, or roughly half of private sector employment. During this period unemployment has fallen from 20% to 5%. However, underemployment - persons that worked part of the year but would have worked more if jobs had been available - is still relatively high at 32% of the workforce.

North Slope Borough projections for future growth in population and employment were not prepared for Nuiqsut. However, the following assumptions can be applied:

- recent historic annual growth rates of village population (slightly over 2%) would continue into the future
- village labor force changes would follow natural shifts in the age distribution of village population
- unemployment will stay at 5% of the labor force
- the ratio of North Slope Borough government to total village employment will stay the same

These assumptions would result in a projected 1994 population of Nuiqsut of 345.

### **3.2.3 Community Facilities**

Figure 3-1 shows the location of community facilities.

#### **Utilities**

The North Slope Borough's Department of Public utilities is responsible for the operation of the major utilities, which include an electric power generation and distribution system, water services, sewage collection services, and solid waste disposal services.



TABLE 3-2  
OCCUPATION COMPOSITION OF EMPLOYMENT  
NUIQSUT

OCCUPATION GROUPS	NUMAT	NON- NUMAT	TOTAL	% TOTAL
EXEC. ADMIN. MGR.	6	5	11	7.6%
PROFESSIONAL	0	0	0	0.0%
TEACHER	3	7	10	6.9%
TEACHER AIDE	2	1	3	2.1%
TECHNICIAN	7	1	8	5.5%
ADMIN. SUPPORT	16	0	16	11.0%
SERVICE	25	4	29	20.0%
OPERATOR/MECHANIC	39	0	39	26.7%
PILOT	0	0	0	0.0%
LABORER	21	0	21	14.5%
CRAFTSMAN	15	2	17	11.7%
ARTISAN	0	0	0	0.0%
ARMED FORCES	0	0	0	0.0%
TRAPPER/HUNTER	0	0	0	0.0%
OTHER	0	0	0	0.0%
TOTAL EMPLOYED	127	18	145	100.0%
% OF TOTAL	87.6%	12.4%	100.0%	
LABOR FORCE	134	18	152	
% OF TOTAL	88.2%	11.8%	100.0%	
TOTAL UNEMPLOYED	7	0	7	
UNEMPLOYMENT RATE	5.2%	0.0%	4.6%	
TOTAL UNDER-EMPLOYED	47	1	48	
UNDER-EMPLOYMENT RATE	35.1%	5.6%	31.6%	

## Notes:

- (1) Total employed includes part-time, temporary, as well as full-time employment.
- (2) The occupation category "OTHER" includes underemployed persons otherwise not accounted for. Underemployment refers to persons who were unemployed because they could not find a job during part of the year.
- (3) Unemployed refers to persons out of work because they could not find a job for the entire twelve-month period.
- (4) Labor force = employed + underemployed + unemployed.
- (5) Unemployment rate = persons unemployed divided by the labor force.

Source: NSB Census of Population and Economy, 1980.

TABLE 3-3  
INDUSTRY COMPOSITION OF EMPLOYMENT  
HUCSUT

INDUSTRY GROUP	NON-		TOTAL	% TOTAL
	RURAL	URBAN		
PRIVATE SECTOR				
FISHERIES	0	0	0	
MINING	5	0	5	
CONSTRUCTION	5	2	10	
TRANSP/COMM/PUBLIC UTIL	2	0	2	
TRADE	0	0	0	
FINANCE/INSUR/REAL EST	0	0	0	
BUSINESS/REPAIR SERV	2	0	2	
ENTERT/RECRE/TOURIST SER	0	0	0	
HEALTH, SOCIAL, & EDUC SER	0	0	0	
SELF-EMPLOYED	2	1	3	
NATIVE CORP & AFFILIATE	21	1	22	
OTHER	1	0	1	
SUBTOTAL	41	4	45	30.8%
NSB GOVERNMENT				
HEALTH	7	0	7	
PUBLIC SAFETY	1	1	2	
MUNICIPAL SERV	31	0	31	
FIRE DEPT	0	0	0	
SEARCH & RESCUE	0	0	0	
HOUSING	3	0	3	
WILDLIFE MGT	1	0	1	
PLN & MAP	10	0	10	
LAW OFFICE	0	0	0	
ADMIN & FINANCE	0	0	0	
PLANNING	0	0	0	
INDUSTRIAL DEVELOPMENT	0	0	0	
HIGHER EDUCATION CENTER	0	0	0	
MAYOR'S OFFICE & ASSEMBLY	3	0	3	
OTHER NSB	0	0	0	
SUBTOTAL	64	1	65	44.5%
NSB SCHOOL DISTRICT	15	13	28	19.2%
NSB SUBTOTAL	79	14	93	63.7%
OTHER LOCAL GOVT				
OTHER LOCAL GOVT	4	0	4	2.7%
STATE GOVT	1	0	1	0.7%
FEDERAL GOVT	3	0	3	2.1%
ARMED FORCES	0	0	0	0.0%
SUBTOTAL ALL GOVT	87	14	101	69.2%
GRAND TOTAL	128	18	146	100.0%
% OF TOTAL	87.7%	12.3%	100.0%	

Notes:

(1) Figures equal to number of persons employed, including part-time, temporary, and full-time employment.

Source: NSB Census of Population and Economy, 1989.

### Schools and Public Buildings

Nuiqsut has a school complex that includes a Early Childhood Education Program and grades K through 12. In addition to classrooms and offices, the complex has a multi-purpose/gymnasium facility, a swimming pool and shop areas. Other major public buildings in Nuiqsut include the City Offices, the Community Building, the Public Safety Building, the Fire Station, the Health Clinic, and the Heavy Equipment Storage Building.

### Transportation

Nuiqsut's airport is owned by the State of Alaska and maintained by the North Slope Borough. The gravel airstrip is 150 feet wide by 5,000 feet long. Commercial service is provided several times a week by Cape Smythe Air Service from Barrow and Deadhorse.

The road system within the townsite is the other major transportation system in Nuiqsut. It is maintained by the North Slope Borough Public Works Department. There has been considerable interest by Nuiqsut residents in having the village connected to the road system of Kuparuk and Deadhorse to allow residents access to the rest of the state. However, there is also a desire to prevent non-resident access to the community; this desire has kept the village from pursuing state funding for a road connection, because such funding would require that the road be open to the general public of the state. The City of Nuiqsut operates a small shuttle bus that provides service around town and to the airport.

Boats, ATV's and snow machines are used for transportation throughout the planning area. Boats are used during the open water period for subsistence activities and travel to hunting and fishing camps. Three and four wheelers are used on the barrier islands and on riverbanks during the summer months. Snowmachines are the most important means of transportation during the winter, both out on the sea ice and for travelling inland.

### **3.2.4 Land Use and Ownership**

#### Land Use

Within the Colville River Delta AMSA, categories of land use include subsistence and other traditional uses; resource development, such as gravel extraction and exploration for oil and gas; military uses such as Distant Early Warning (DEW) line sites; and uses associated with the village of Nuiqsut, including residential, commercial, public utilities and services, and transportation uses.

**Subsistence and Traditional Uses.** Subsistence and other traditional land uses occur throughout the AMSA; they include fixed sites, such as fishing and hunting camps; areas of predictable use, such as fish streams; or often move in response to the location of the resource being harvested. Maps 1 and 2 provide information of subsistence use areas.

### **Commercial Fishing**

The Helmricks family has operated a full commercial fishery on east and main channels in the outer Colville River Delta for over 30 years. This fishery uses gill nets set under the ice from early October through mid-November. Observations of the 1985 catch indicated a harvest of 10,321 Arctic cisco and 8,657 least cisco in the main channel, and 13,358 Arctic cisco and 8,939 least cisco in the east channel (Entrix 1986).

**Resource Development.** Resource development uses include historic and proposed gravel extraction, and exploration for oil and gas resources (Figure 3-1 through 3-3). Historically, gravel extraction has occurred along river channels near the village.

Oil and gas development has expanded westward from Prudhoe Bay since the discovery of oil in the late 1960's, and now approaches the eastern side of the Colville River. The Colville River Delta and waters offshore have been subject to several federal and state oil and gas lease sales. Over the last five years, six state lease sales have been held in the vicinity of the Colville River Delta AMSA:

Lease Sale 39	Beaufort Sea
Lease Sale 43	Beaufort Sea
Lease Sale 43a	Colville River Delta/Prudhoe Bay Uplands
Lease Sale 48	Kuparuk Uplands
Lease Sale 54	Kuparuk Uplands
Lease Sale 66a	North Slope Exempt

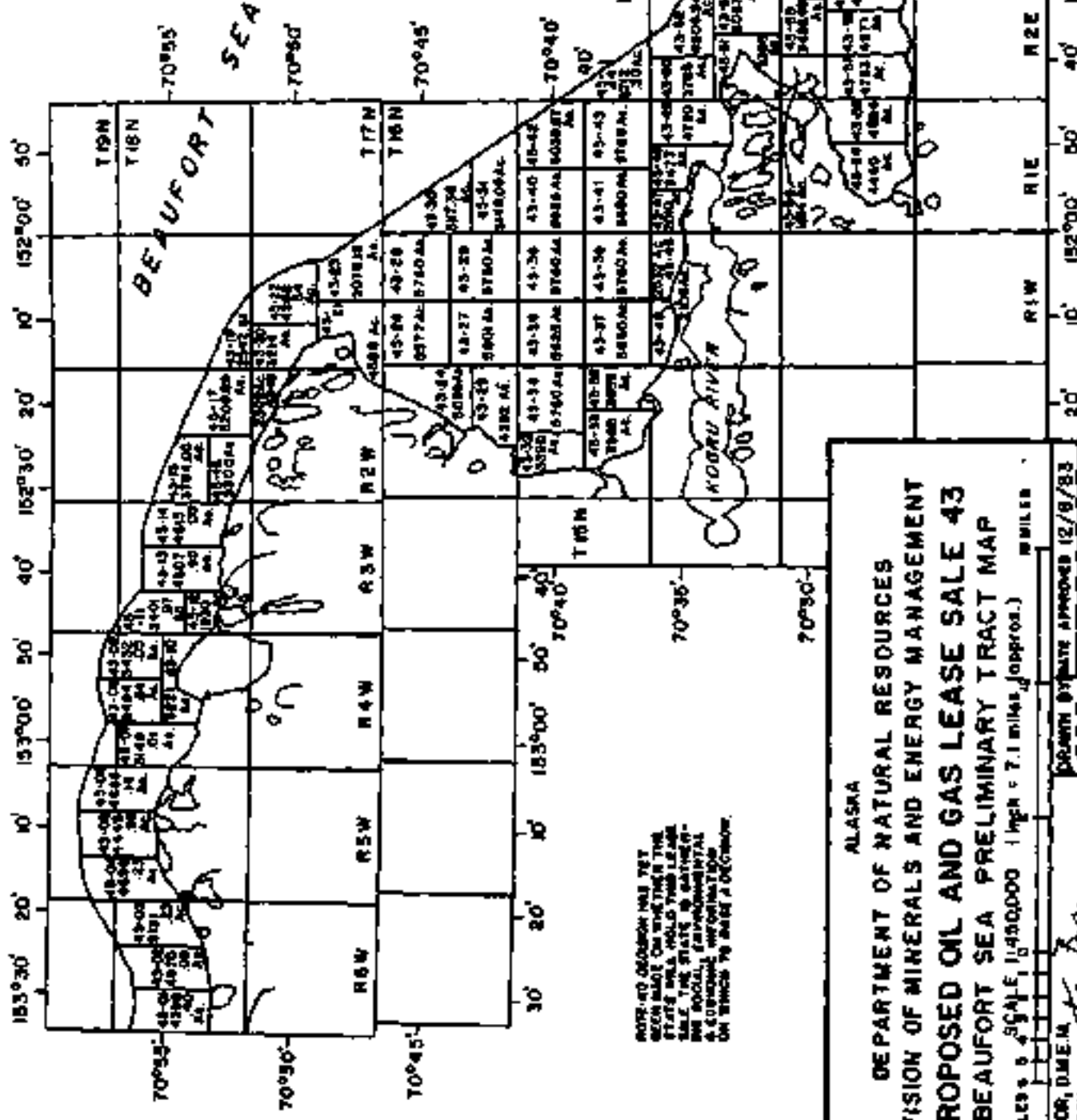
Exploration has occurred on tracts in several of these sale areas; however no development has occurred yet. Additional sales have been scheduled: North Slope Exempt Sale 73A (1990); Beaufort Sea Sale 65 (1991); and Kuparuk Uplands Sale 75 (1992)

Federal oil and gas lease sales off the Colville River Delta include several Beaufort Sea Lease Sales (92 and 97) and the Barrow Arch Lease Sale. Exploration has occurred on tracts in several of these sale areas; however no development has occurred yet. Beaufort Sea Sale 124 is scheduled for 1991.

Gravel has been dredged from Colville River channels by the North Slope Borough for construction of capital improvements projects. Kuukpiik Corporation has identified some sources of gravel on corporation lands, and will make them available should demand for gravel arise. Should oil and gas development occur in the delta, large quantities of gravel will be required for the construction of drill pads, roads, and production facilities.



NOTE: THIS MAP IS NOT TO BE  
CONSIDERED AS AN OFFICIAL  
TRACT MAP. A SET OF FOUR 1:50,000  
SCALE TRACT MAPS IS AVAILABLE AT  
THE DIST. OF NATURAL RESOURCES,  
DIVISION OF MINERALS AND ENERGY,  
MARCHAND STREET, CORCORAN ST.,  
ANCHORAGE, ALASKA 99501  
PHONE (907) 276-2435



NOTE: NO GEORGRAPHIC TEST  
SECTION MADE ON WHETHER THE  
STATE WILL HOLD THIS LEASE  
SALE. THE STATE IS BATHMET-  
ING SOCIAL, ENVIRONMENTAL  
A ECONOMIC INFORMATION  
ON WHICH TO MAKE A DECISION.

ALASKA

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF MINERALS AND ENERGY MANAGEMENT  
**PROPOSED OIL AND GAS LEASE SALE 43**  
BEAUFORT SEA PRELIMINARY TRACT MAP

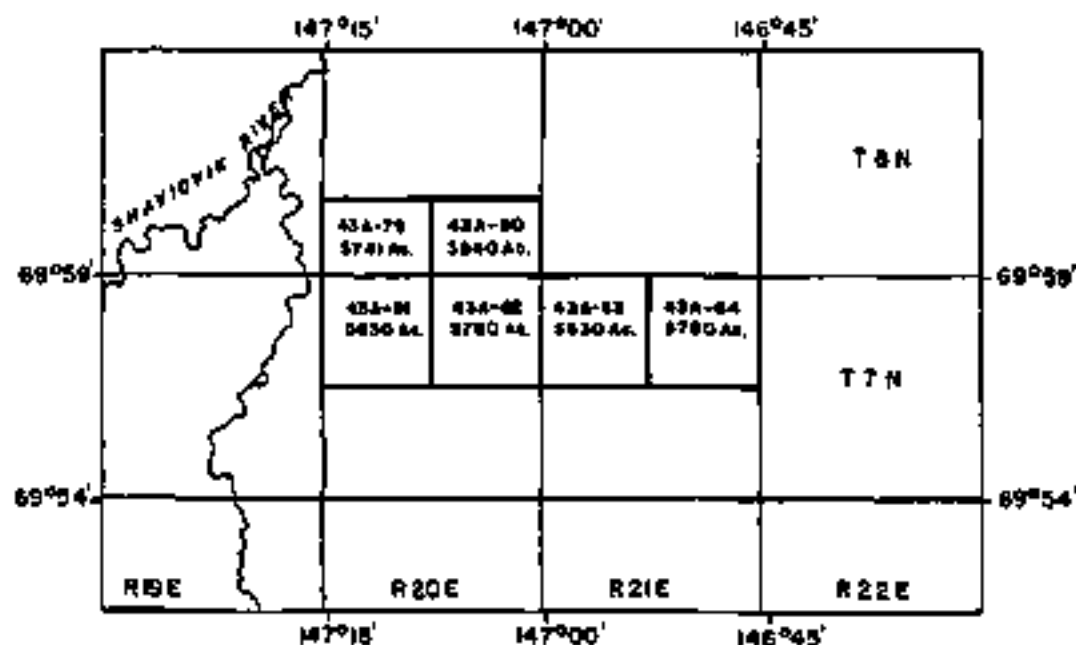
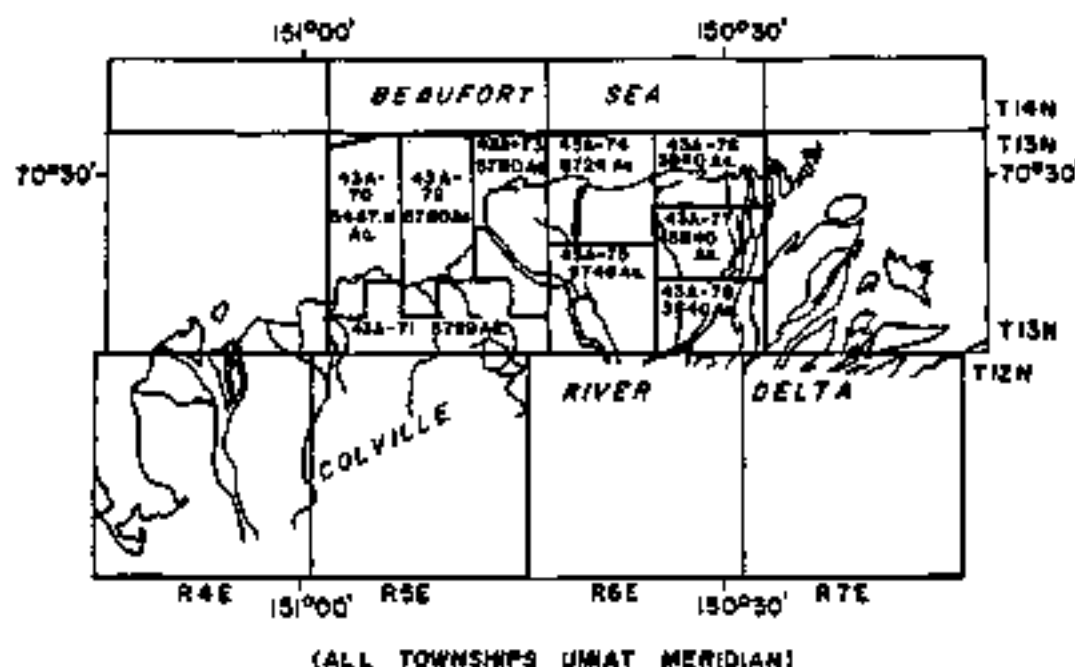
SCALE: 1:500,000 (1 inch = 7.1 miles, approx.)

MILES

DIRECTOR, D.M.E.M. *Ray Brown* DRAFT DATE APPROVED 12/8/83  
KAY BROWN O.O.S.

LEASING MANAGER, *Annella Wiggins* CHECKED  
ANNELLA WIGGINS *Annella Wiggins* U.S.N.

(ALL TOWNSHIPS UMIAT MERIDIAN)



SCALE 1:338,000 1 INCH = 5.333 MILES Approx.

MILES 6 5 4 3 2 1 0 6 12 18 MILES



ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF MINERALS AND ENERGY MANAGEMENT

**PROPOSED OIL AND GAS LEASE SALE 43A**

**COLVILLE RIVER DELTA/PRUDHOE BAY UPLANDS**

**PRELIMINARY TRACT MAP**

DIRECTOR, D.M.E.M.  
KAY BROWN

LEASING MANAGER,

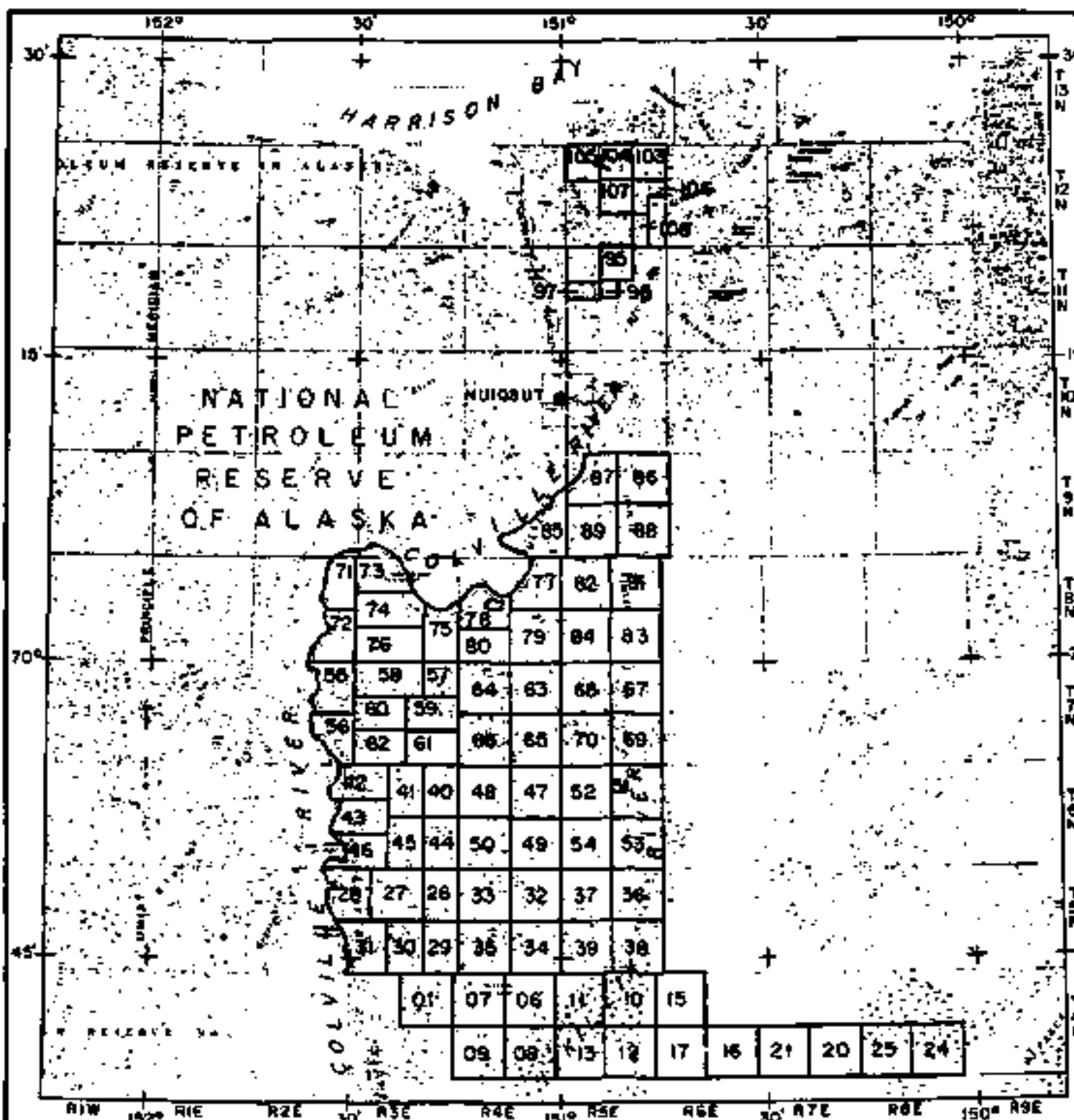
DRAWN BY  
O.D.S.

CHECKED

DATE APPROVED 12/2/85

NOTE: NO DECISION HAS YET BEEN MADE ON WHETHER THE STATE WILL HOLD THIS LEASE SALE. THE STATE IS BATHING AND SOCIAL, ENVIRONMENTAL & ECONOMIC INFORMATION ON WHICH TO BASE A DECISION.

NOTE: THIS MAP IS NOT TO BE CONSIDERED AS AN OFFICIAL TRACT MAP. A SET OF FOUR TRACT MAPS IS BEING PREPARED BY THE DIVISION OF NATURAL RESOURCES, DIVISION OF MINERALS AND ENERGY MANAGEMENT, 100 COLVILLE ST.



**Village Townsite Land Use.** Village land uses include residential, commercial, and public utilities and community services, most of which take place within the boundaries of the village townsite. The last detailed study of land use in Nuiqsut was conducted in 1983; at that time nearly 68 % of the 400.7 developed acres of the townsite are in the airport tract. Of the remaining 141 acres, 23 % was occupied by residential use, 29 % was taken up by public roads, utilities and storage facilities accounted for another 17 %, public facilities occupied 4 %, and 1 % was in commercial use. Vacant land accounted for 58.7 acres. Current distribution of land use is similar, with some increase likely in residential, public facility and utility uses resulting from Borough CIP projects.

### **Ownership and Management**

**Ownership.** Land ownership status is shown in Map 2-1 in the AMSA Boundary Section. Land ownership is a mix of Native, State, and federal lands. Native corporation lands with patents or interim conveyance are concentrated in the townships from Nuiqsut south, along the two main river channels, and west along the coast of Harrison Bay. With the exception of National Petroleum Reserve in Alaska (NPR-A) lands, surface ownership is held by Kuukpiik Corporation and subsurface ownership is held by Arctic Slope Regional Corporation. Within NPR-A, subsurface rights for lands conveyed to Kuukpiik Corporation remain with the federal government. Lands selected by the Native corporations are also located in the AMSA, often underlying state land selections. Negotiations on conflicting selections between the state and Arctic Slope Regional Corporation are being conducted. At least 20 Native allotments are located throughout the AMSA, primarily along the river channels.

The State of Alaska owns the lands to the east of the Colville River Delta, which include the Prudhoe Bay and Kuparuk oil and gas fields, and are classified for resource management. A block of state-owned lands, also classified for resource management, are located along the mouth of the Delta and down along the Tanagwok Channel of the Colville River. There are several locations where state selections overlay Native corporation selections.

Federal lands within the National Petroleum Reserve in Alaska begin along the west bank of the Colville River and its Necheilk Channel. Federal waters lie three miles off the mouth of the Colville River. These waters have been the subject of several federal oil and gas lease sales, and activities in those leases could have a significant and direct effect on coastal resources of the Colville River Delta AMSA.

**Land Management.** Land within the Colville River Delta AMSA is subject to several land use plans and controls. The entire AMSA lies within the North Slope Borough Coastal Management Program boundaries. Certain types activities that need federal, state, and Borough permits and approvals are required to be consistent with the policies of the



Borough's coastal management program. Consistency with the coastal management program is determined through a formal permit review process.

Activities on Borough, state, and private land are subject to the North Slope Borough's Land Management Regulations (LMR's), under Title 19 of the Borough Code. The LMR's establish zoning districts for the Borough, and depending on the nature of the zone and particular activity involved, require permits and compliance with LMR policies. Part of the AMSA lies within the Kuparuk Resource Development District. The Resource Development District is a zone designed on a master plan to accommodate large scale resource extraction and related activities.

State lands within the AMSA have not been subject to an Area Plan, but have undergone the state classification process. State lands within the AMSA have been classified for Resource Management. This a general classification used for management of existing public use, as an alternative for specific management classifications for recreation, fish and wildlife, or minerals.

Both the Arctic Slope Regional Corporation and Kuukpik Corporation, the ANCSA village corporation for Nulqsut, have guidelines and permit requirements pertaining to use of their lands.

### 3.2.5 Subsistence

Subsistence is the customary and traditional use of natural resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handicraft articles; and for barter or sharing among subsistence users. For residents of much of rural Alaska, including the study area, subsistence is the predominant way of life, and a continuation of a traditional way of life. It defines personal identity, how people relate to each other, and how they relate to the surrounding environment. Because wage employment and sources of cash in rural communities are limited, and processed food is available but expensive, subsistence is a major component of the economy, putting food on the table and providing fuel, building material, and clothing. Subsistence harvests provide the bulk of the Inupiat Eskimo diet.

Subsistence Resources. Table 3-4 presents a list of subsistence resources used by residents of Nulqsut. The residents of Nulqsut participate in the pursuit of a diverse number of terrestrial and marine subsistence resources. Fish play a particularly important role in the Nulqsut subsistence harvest. The subsistence harvest consists of a variety of species, including ciscos, whitefishes, char, lake trout, grayling and burbot (Moulton et al. 1986). All except lake trout are commonly caught within the lower river and delta. Broad whitefish

Table 3-5 SPECIES HARVESTED, BY RESOURCE CATEGORY,

Resource Category	Species
Caribou	Caribou
Vegetation	Blueberry Cloudberry (grass roots) (sourdock) wild Celery wild Potato Willow leaves Hudson's Bay Tea
Furbearers	Arctic Fox Red Fox Wolf Wolverine
Whale	Belukha Bowhead
Invertebrates	Clams (unidentified) Tanner Crab Shrimp (unidentified)
Wildfowl	Pacific Black Brant Canada Goose White-fronted Goose Snow Goose Common Eider King Eider Spectacled Eider Steller's Eider Oldsquaw Pintail Snowy Owl Willow Ptarmigan Bird's eggs
Brown bear	Brown bear
Fuel and Structural Material	Coal Driftwood Willows
Small Mammals	Arctic Ground Squirrel Arctic Marmot
Walrus	Walrus
Seals	Bearded Seal

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**Resource Category**

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**Species**

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**Polar Bear**Ringed Seal  
Spotted/Harbor Seal**Polar Bear****Fish**Arctic Char  
Arctic Cisco  
Arctic Flounder  
Arctic Grayling  
Bering Cisco ?  
Chum Salmon  
Capelin/Smelt ?  
Pacific Herring  
Pink Salmon

---

is the primary species taken during the summer subsistence fishery, while Arctic cisco is the target species in the fall (George and Nageak 1986, Moulton and Field 1988).

**Harvest Patterns.** The seasonal round of subsistence activities is shown in Figure 3-4. In general, the pattern and timing of the harvest relates to the seasonal distribution and abundance of resources in the area. Some resources, such as fish and seals, are harvested during two peak cycles. Fishing is particularly important after breakup in late June through freezeup by November. Sealing takes place during the fall and spring, although seal will be harvested if encountered in open water during the summer months. Most other resources are harvested during one general period, and a few, such as caribou, are harvested throughout the year (although harvests peak during the spring and fall migrations through the area). Waterfowl are taken during the spring and summer.

**Subsistence Use Areas.** Subsistence use areas mapped in 1979 are shown in Maps 1 and 2. More-recent maps of subsistence use areas are still under preparation by the Department of Fish and Game; these maps will be incorporated in the Public Hearing Draft for the Colville River Delta AMSA. The per household minimum subsistence use area estimated by ADF&G for Nuiqsut is 236 square miles.

Several studies have addressed the subsistence fishery of Nuiqsut. Estimates of the 1984 fishing effort for the village was over 300 net days, with an additional 371 net days from other Colville River Delta residents. Broad whitefish are harvested in the main and Nechelek Channels of the Colville River during June and July. Fish Creek is another important summer fishing area for Nuiqsut residents, primarily for broad whitefish. The Kupigruak Channel of the Colville River is the most important fall fishing area in the region (George and Nageak 1986). Studies at three stations on this channel in 1985 documented 190 net days during the study period, with Arctic and least cisco accounting for over 95% of the catch (George and Kovalsky 1986). Estimates of the total catch based on catch per unit effort at this channel was 10,867 fish. The Nechelek Channel is also a fall fishery site, although catch estimates are significantly lower, at over 1,000 fish. A minimum of 54 net days of effort were observed at this site in 1984.

**Harvest Methods and Access to Resources.** Hunting for bowhead whales is a community-wide activity, unlike other subsistence activities. Whaling crews are formed during the fall to hunt for whales, using small boats with paddles and outboard motors, and a shoulder fired harpoon gun. Nuiqsut is not well situated near leads to participate in spring whaling, and village some residents go to Barrow to participate with Barrow whaling crews. Considerable preparation is required for the hunt, and depending on conditions and the success of the hunt, hunting can require several weeks. Once a whale has been caught, much of the village helps with the task of butchering, and whale meat is distributed throughout the village using traditional patterns of sharing.

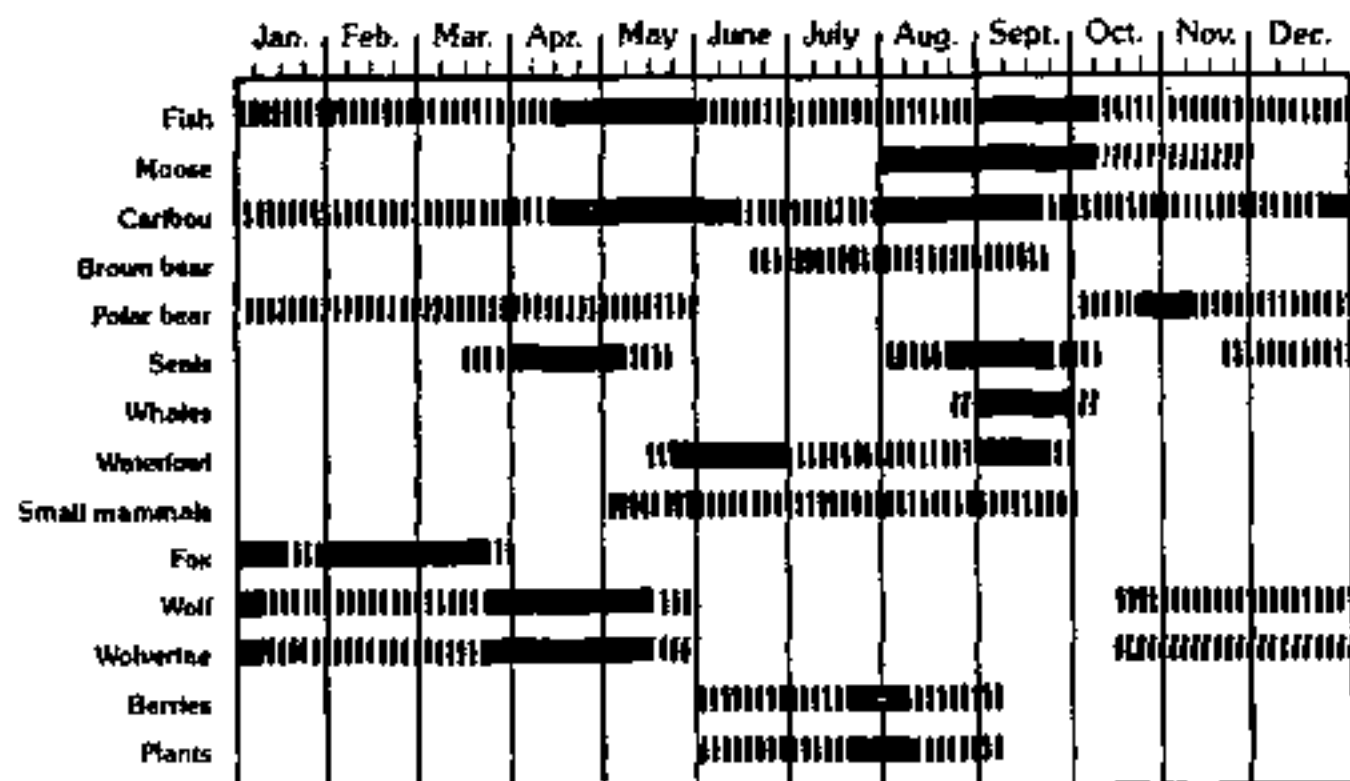
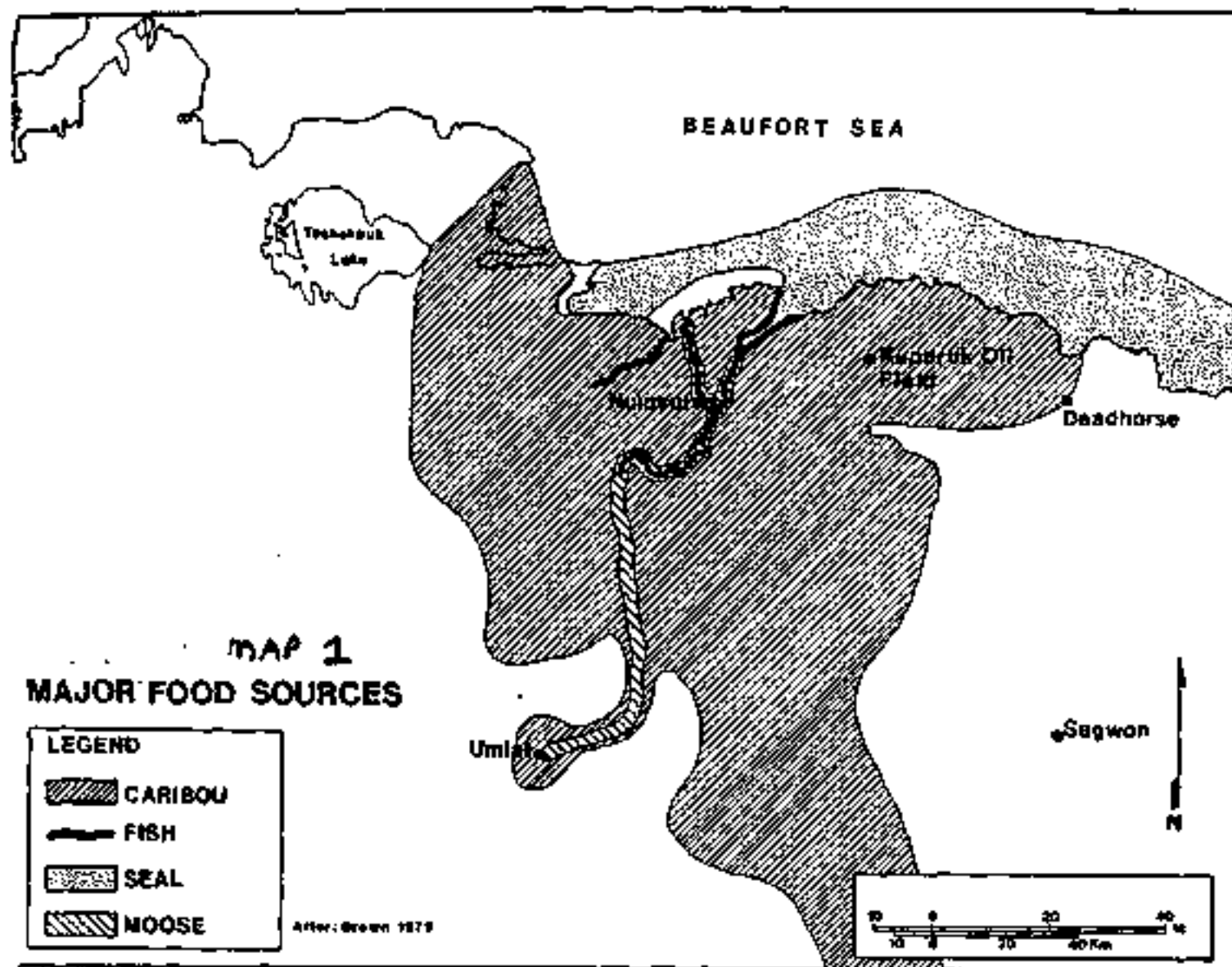
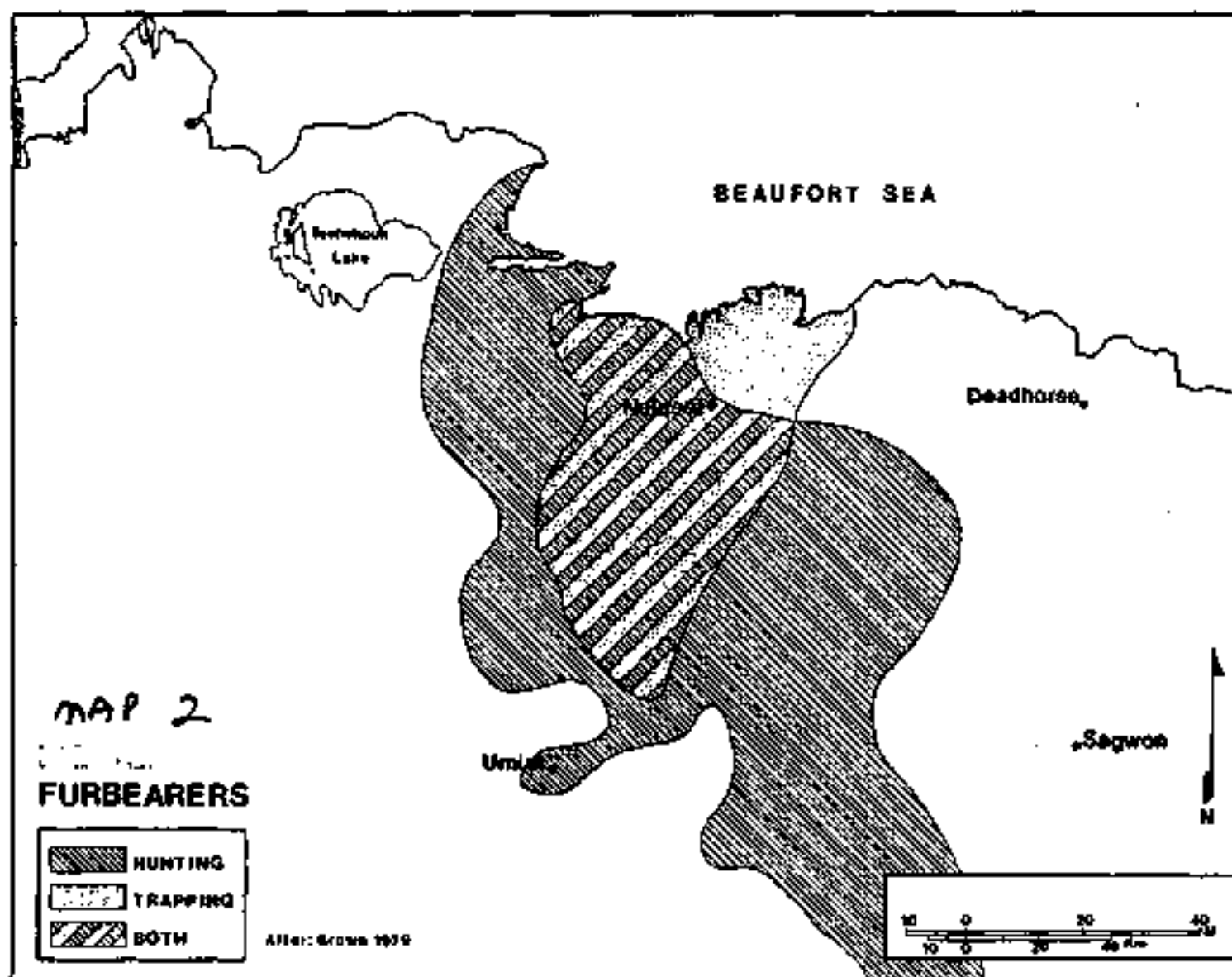


Figure 3-4 Annual round of harvest activities by Nuiqsut residents. Solid line indicates time when harvest usually takes place. Broken line indicates occasional harvest effort (Hoffman et al. 1979; Galinaitis et al. 1983; Trent, pers. comm. for moose).





Other marine mammals, caribou, and some furbearers are hunted with rifles; shotguns are used for other furbearers and waterfowl. Fishing in the channels of the Colville River and Fish Creek is done with gillnets set out along the banks of the rivers. Gill nets are used for open water fishing. During the fall fishing occurs both up and down river, after the ice is thick enough for snow machine traffic, using rod and reel, and nets under the ice.

Access to subsistence resources and use areas depends on the season. During the open water months, small boats with outboard motors are used extensively throughout Kasagaluk Lagoon, for fishing, marine mammal hunting, and access to some waterfowl and caribou hunting areas. Boats are also used to get to fish camps up the rivers within the AMSA. Three and four wheelers are used on the barrier islands and on riverbanks during the summer months. Snowmachines are the most important means of access during the winter, both out on the sea ice and for travelling inland.

Harvest and Distribution. The Department of Fish and Game is in the process of finalizing village and household level information on the harvest of various subsistence resources. This information will be incorporated in the Public Hearing Draft for the Colville River Delta AMSA. Data collected by ADF&G in 1985-6 indicates that total per capita harvest of subsistence resources for Nuiqsut was 523 pounds. Approximately 74% of the households reported that half or more of all fish, game, birds and plant resources came from the local environment. In general, caribou and fish appear to be the most important resources in terms of total pounds harvested. Annual subsistence resource harvests of nine northwestern Alaska whaling villages, averaged for the period of 1962-1982, estimated that 400 caribou were harvested annually, representing 28,000 kilograms (roughly 12, 727 pounds) of meat (Alaska Consultants and Stephen Braund and Associates 1984). Per capita fish harvest for Nuiqsut in 1985-6 was 177 pounds, which is high compared to other North Slope Borough communities.

### **3.2.6 Political and Institutional Structure**

There are several institutions that play an important role in making decisions that affect the village of Nuiqsut. These include the City of Nuiqsut and the Kuukpik Corporation.

The City of Nuiqsut has a seven member city council and a mayor. The City interacts on a regular basis with the North Slope Borough and state and federal governmental agencies. This includes the permit notification for the Borough's LMR permits, the Coastal Management Consistency Review, and Capital Project Planning.

Kuukpik Corporation is the for-profit village corporation established by ANCSA. It manages and disposes of surface lands to which it is entitled under ANCSA. The corporation is also involved in several economic venture within and outside of the village of Nuiqsut.



## **4.0 ISSUES AND CONFLICTS: COLVILLE RIVER DELTA AMSA**

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### **4.1 INTRODUCTION**

Identification of issues and potential conflicts between the users of coastal resources is an important part of the AMSA planning process. The purpose of the plan is to resolve these issues and conflicts. The issues and conflicts to be addressed provide a focus for the information presented in the resource inventory of the AMSA plan. They also give an indication of which agencies and groups are most appropriate to participate in the planning and review team for the AMSA. Issues and potential conflicts provide direction for the types of policies necessary to develop additional management guidance for the AMSA (beyond the policy direction of the federally approved draft of the Borough coastal management program). Finally, the issues and conflicts help determine what forms of implementation, in addition to the consistency review process, might be appropriate to consider for the AMSA plans.

One of the objectives of the AMSA process is to work with affected communities, agencies, and resource user groups to develop additional guidance for activities taking place in areas of special value or importance. The identification of issues and conflicts should incorporate ideas and direction from these groups. For the North Slope Borough AMSA planning effort, the identification of the issues and conflicts presented in this chapter obtained information from the following sources:

- meetings and discussions with individuals in the villages of Point Lay, Point Hope and Nuiqsut
- a meeting of state and federal agencies to review issues and conflicts that came out of village meetings
- a meeting with representatives of the oil and gas industry to discuss issues and conflicts that came out of village and agency meetings

### **4.2 ISSUES AND CONFLICTS**

Most of the issues and conflicts identified for the Colville River Delta AMSA reflect the value and unique nature of the fish and wildlife resources of the area; the traditional subsistence way of life of the people of Nuiqsut; the geophysical hazards that are present; and the potential for development of gravel and petroleum resources. The North Slope Borough and its residents wish to avoid conflicts between resource development and other important values and characteristics of the area.

## FISH AND WILDLIFE RESOURCES

The Colville River is the largest and most productive river system in the North Slope. The river delta provides a variety of terrestrial and riverine habitat that supports abundant numbers of fish and wildlife. Recent studies have indicated the importance of the delta to wildfowl and fisheries stocks in particular. Some of the management issues for the AMSA include obtaining a better understanding of fish and wildlife use of the habitats it contains, including changes in distribution and abundance. Other issues address the sensitivity of fish and wildlife to impacts.

- Issue 1 maintain fisheries stocks in the Colville River and surrounding offshore areas, including protection of important habitat areas within the AMSA
- Issue 2 protect important nesting, rearing, and staging habitat for waterbirds within the Delta
- Issue 3 assess caribou herd utilization and important habitat within the Delta
- Issue 4 assess impacts from potential dredge and fill activities on fish and wildlife and their habitat
- Issue 5 assess impacts from general disturbance of fish and wildlife resources resulting from human activities
- Issue 6 assess the cumulative impacts from general disturbance of fish and wildlife resources resulting from human activities, oil and gas development, and harvest of fish and wildlife resources

## GEOPHYSICAL HAZARDS

Village residents are aware of the forces created by storm and ice conditions in the Colville River Delta and the Beaufort Sea. They are concerned about the ability to safely explore for and develop resources in coastal and marine waters. The effects of dredging and gravel extraction on natural processes such as erosion, and of erosion and flooding on human activities and man-made structures are also concerns.

- Issue 1 assess potential impacts on drainage patterns resulting from placement of roads, culverts, and bridge facilities within the delta
- Issue 2 assess potential impacts resulting from dredging, gravel extraction, and other human activities within the AMSA
- Issue 3 evaluate the extent of natural erosion or filling in of the channels of the Colville River
- Issue 4 assess the potential effects of erosion on structures and human activities within the delta

- Issue 5 assess the potential of ice gouging effects on the integrity of buried oil and gas pipelines in the areas off the Colville River Delta
- Issue 6 assess the potential impacts from over-ice flooding on the integrity of structures within and off the Colville River Delta
- Issue 7 assess the impacts of causeways on erosional and depositional patterns within and off the Colville River Delta

## **SUBSISTENCE**

Subsistence is of extreme importance to the villages in the North Slope Borough, not only for its contribution to diet and economy, but for the foundation it provides to the lives, culture and kinship of borough residents. While the economic benefits of resource development are welcome, protection of subsistence resources and the ability to harvest them is a higher priority.

- Issue 1 evaluate potential causes of diminishing catches of qaaktaq (cisco) for local residents and the relationship to natural conditions and human activities
- Issue 2 maintain subsistence fishery harvests by local residents
- Issue 3 maintain caribou harvest levels by local residents
- Issue 4 minimize further restrictions of local resident access and hunting in existing oil field areas or associated with expansion into new areas

## **COMMERCIAL AND RECREATION USE OF FISH AND WILDLIFE RESOURCES**

State and federal managers of public lands are often required to accommodate multiple uses of those lands, including recreation and commercial uses. A commercial fishery for whitefish currently takes place in the Colville River Delta, and there has been some discussion about establishing commercial services for sport hunting and fishing. It is desirable to allow for such uses in a manner that does not compete for subsistence resources or cause social impacts to Borough villages.

- Issue 1 maintain commercial harvests of fisheries resources in the Delta
- Issue 2 evaluate the ability of recreational harvests to occur without significantly competing with subsistence harvests
- Issue 3 minimize trespass on Native lands and disturbance of traditional hunting and fishing camp sites

## RESOURCE DEVELOPMENT

Sound resource development will benefit residents on national, state and local levels. The objective of coastal management is to balance resource development with the protection of other coastal resource. Oil and gas exploration, development, and production has occurred on state lands at Prudhoe Bay and Kuparuk. Further exploration could occur in the Delta itself, on federal leases north of the AMSA, and on private and federal lands to the west. Gravel extraction needed to meet community and industry is another form of resource development. Local residents are concerned about development impacts on their communities and on the fish and wildlife resources that they harvest.

### Dredge and Fill, Gravel Extraction

- Issue 1 assess the ability to dredge the channels of the Colville River to improve navigation while not harming fish and habitat
- Issue 2 utilize advanced identification of potentially suitable and unsuitable dredge and fill areas within the Colville River Delta as a planning tool, without overlooking other values and alternatives
- Issue 3 provide advanced identification of sources of gravel for development activities (Kuukpiik Corporation proposal)

### Road System Connection and Public Access

- Issue 4 provide access from Nuiqsut to Deadhorse while not allowing general public access into Nuiqsut, thereby preventing associated socioeconomic impacts and competition for fish and wildlife resources
- Issue 5 provide for public access on state lands and navigable waters, in accordance with state regulations, and in a manner that minimizes impacts to local communities

### Oil and Gas Development

- Issue 6 evaluate the ability of oil and gas projects to operate safely on existing and potential leases within and off of the Colville River Delta
- Issue 7 minimize impacts to subsistence hunting/fishing and traditional access routes, resulting from exploration and oil field development
- Issue 8 minimize impacts to fish and wildlife resources and habitat from exploration activities and oil field development, including impacts from general levels of disturbance
- Issue 9 continue evaluation of construction of causeways (both within and outside the Colville River Delta) and their impact on fisheries resources within the Delta

- Issue 10 assess the impact of the Oliktok sea water treatment (injection) facility on fish and their consumption by local residents
- Issue 11 assess the adequacy of oil spill contingency plans and drills, and make appropriate revisions
- Issue 12 institute effective clean-up of debris and navigational hazards from previous development projects (both within the Delta, and where debris from projects has washed ashore in the Delta)
- Issue 13 evaluate the location and construction characteristics of potential roads for oil and gas exploration and development to avoid impacts on fish and wildlife and subsistence activities

## AIR, LAND, AND WATER QUALITY

There are increasing concerns in the North Slope Borough regarding air and water quality in the Arctic, and its effects on the people and the fish and wildlife. This is particularly true in areas adjacent to intensive oil and gas development. It is in the best interests of residents and resource developers alike to minimize project-specific and cumulative impacts from human activities.

- Issue 1 assess the ability to recover oil from a spill under the ice, and institute effective safeguards
- Issue 2 assess the ability to contain an oil spill during a storm event, and institute effective safeguards
- Issue 3 provide methods to control sources of and clean-up debris from offshore operations
- Issue 4 assess and implement proper disposal techniques and locations of drill muds, cuttings, and other wastes from exploration, development, and operations activities
- Issue 5 assess potential water quality effects resulting from dredge and fill activities, water withdrawals, and other human activities
- Issue 6 ensure proper storage and disposal of fuels and other hazardous materials associated with human activities

## ARCHAEOLOGICAL AND HISTORICAL RESOURCES

The culture and history of the people of the North Slope are not only important to the residents of the North Slope Borough, but to the state and nation as well. The Borough, state and federal governments have established programs to protect and promote understanding of archaeological and historical resources.

- Issue 1 protect archaeological, historic, and traditional land use sites from resource development activities

## COORDINATION AND PLANNING

A major reason behind local participation in coastal management is to increase their effective involvement in activities that affect residents. The process of communicating and attempting to address concerns at an early stage of project development can decrease the likelihood for conflict later on. This process of communication with the villages applies not only to state and federal government and industry, but also to departments within the North Slope Borough.

- Issue 1 Involve the Nuiqsut City Council in planning for resource development and CIP projects
- Issue 2 coordinate regional planning efforts such as DNR area and related plans, disposals of state and federal resources (such as oil and gas lease sales), and borough comprehensive plans with the village of Nuiqsut
- Issue 3 provide monitoring and enforcement of stipulations on state and borough permits

# APPENDICES

## **APPENDIX A: REFERENCES**

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## **APPENDIX B: PUBLIC PARTICIPATION**

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Providing adequate opportunities for public participation is a requirement of the Alaska and North Slope Borough coastal management programs. Public participation is particularly important in the Area Meriting Special Attention process, where various parties work together to resolve potential conflicts over use of coastal resource in a specific area. Groups who have an important role in the AMSA planning process include affected villages, and organizations within those villages (including Cully Corporation, Tigara Corporation, and Kuukpik Corporation); the North Slope Borough; state agencies such as the Departments of Natural Resources, Fish and Game, Environmental Conservation, and Community and Regional Affairs; federal agencies such as the U.S. Fish and Wildlife Service, the Army Corps of Engineers, the Environmental Protection Agency, and the Minerals Management Service; Arctic Slope Regional Corporation; and the oil and gas industry. It is the intent of the North Slope Borough to involve these groups throughout the AMSA planning process.

The public participation program of Phase 1 of the AMSA planning process included the following elements:

- newsletters
- meetings with village groups
- agency and industry meetings

### **Newsletters**

A two-part newsletter was prepared and mailed to households in the communities of Point Hope, Point Lay, and Nuiqsut in January. A copy is contained in the back of Appendix B. The first part of the newsletter provided an update on the status of the North Slope Borough Coastal Management Program, how coastal management works, how to participate in reviewing permits, and where to get further information. The second part described the Area Meriting Special Attention planning process, including the purpose of AMSA's, AMSA's identified for the North Slope, project schedule, and upcoming village workshops.

### **Village Meetings and Discussions**

Borough staff and the project manager went to the villages of Point Hope (January), Point Lay (April), and Nuiqsut (April) to talk to various village groups about the AMSA process, and to obtain information on resource values and potential issues and conflicts. In each village, they met with the village Mayor, Borough village coordinator, representatives of

the village Corporation, and in most cases, representatives of the village traditional council. The following information was discussed:

- purpose of the AMSA plan and planning process
- resource information, particularly fish and wildlife and subsistence use areas
- planning issues and potential resource conflicts
- the North Slope Borough permit review process and village participation in that process

A major product of these meetings was the preparation of a list of village issues and concerns.

### **Agency and Industry Meetings**

After the village trips were completed, two sets of meetings were scheduled with representatives of state and federal agencies and the oil and gas industry. The agency meeting was held in Anchorage on May 15, and included participation from Fairbanks and Juneau by teleconference. The following information was discussed:

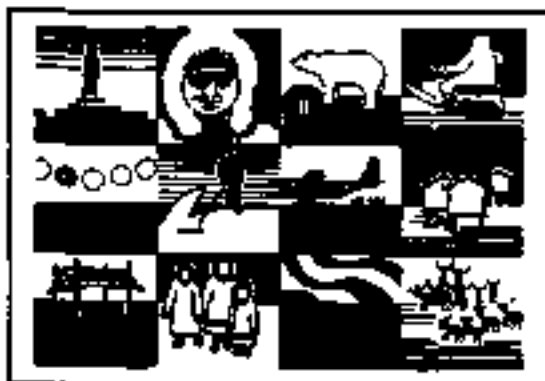
- purpose of Phase 1 of the AMSA project
- schedule of the entire AMSA planning project
- review of current data sources for resource values
- review and modification of the list of AMSA issues and concerns developed from the village trips

A meeting with representatives of the oil and gas industry was held in Anchorage on May 22. The agenda was basically the same as the agency meeting, except that the issues and concerns discussed included modifications suggested by the state and federal agencies.

# NORTH SLOPE BOROUGH

## COASTAL MANAGEMENT PROGRAM UPDATE

*January 1989*



### WHAT IS COASTAL MANAGEMENT?

In the spring of 1988, the federal government approved the North Slope Borough's Coastal Management Program. This means that the Borough's coastal management program is now part of the Alaska Coastal Management Program. The program is used by state and federal agencies as a guideline for permitting development on the North Slope. It took ten years of hard work by the Borough and its people to develop the coastal management program. Why is coastal management so important to the people of the North Slope Borough?

Coastal management is a way to wisely manage the many resources of the coastal area. These resources include the fish and wildlife, subsistence and traditional use areas important to the Inupiat way of life, and the oil, gas, and gravel used by residents of the Borough, state, and nation. Sometimes uses of these resources compete with each other. The main reason to prepare the North Slope Borough's Coastal Management Program is to increase the role of the Borough in managing these coastal resources. Without the program, our role is limited to making comments rather than setting guidelines. The purpose of this newsletter is to:

- help you understand how the Borough's coastal management works,
- help you participate in the coastal management program
- and ask for your guidance in making coastal management decisions

### HOW THE COASTAL MANAGEMENT PROGRAM WORKS

There are three important parts of the Borough coastal management program: the coastal boundaries, the policies, and program implementation. The coastal boundaries show where the coastal area is; the coastal management program cannot be used outside the coastal boundaries (see the coastal boundary map). The policies are the rules of the coastal management program; activities that take place within the coastal zone and require a federal, state, or Borough permit must follow the standards set by the policies. Implementation explains who is responsible for making the program work and how it works.

Certain types of activities (for example, state oil and gas lease sales or construction of major projects like causeways) require a permit or approval from the Borough, state and/or

federal government before the activity can occur. Before the permit or approval can be issued, it goes through a review process to determine if it meets the requirements of Borough, state and federal regulations. Coastal management does not require its own permit, but is one of the regulations that are part of the review process.

When a permit is filed with the federal government, the state government, or the Borough, several things happen:

- it must be determined if the proposed activity is within the coastal boundaries. If the proposed activity is within the coastal boundaries, the permit goes through a review process called the Consistency Review.
- The Borough and other government agencies involved have an equal role in reviewing the proposed activity against the coastal management program policies. During this review the Borough will work with villages that can be affected by the proposed activity to ask for their help in reviewing the proposed activity.
- A decision will be made on whether the activity meets the requirements of the coastal management policies, whether special conditions are needed to make the activity meet the requirements of the policies, or that it can't comply with the policies and cannot be approved.

Depending on what type of permit is required, the review process must be completed within 30 or 50 days. The Borough's recommendation on whether a permit meets the requirements of the coastal management policies and requests for additional information or a public hearing must be submitted to the state by certain days in the 30 and 50 day review.

The Borough will use the coastal management program to ensure that development is balanced with the fish and wildlife resources, and subsistence activities and traditional use areas important to the Inupiat way of life.

## **VILLAGE PARTICIPATION**

As part of the coastal management program consistency review, the Borough works with villages to:

- let them know about the proposed activity
- ask for information on how the village might be affected by the proposed activity
- develop conditions that may be needed to protect resources and activities important to the village.

The Borough will notify a village of the proposed activity and consistency review by contacting the village Borough Coordinator, contacting the village mayor, and by posting a public notice.

To make this program and village participation work, it is important that you do the following things:

1. Read the coastal management policies, and use them in making your comments.
2. Provide details on things like the importance of fish and wildlife or subsistence activities, the time of use, and places you use. It will strengthen the Borough's position to protect these resources and values.
3. Get your village comments back to the Borough on time. If they are received after the comment deadline, comments can't be used.

Comments can be given to your village Mayor, the village Borough Coordinator, or the Permitting Division of the North Slope Borough Planning Department.

### **FOR MORE INFORMATION...**

If you want more information on the North Slope Borough Coastal Management Program, there are several books that are part of the North Slope Borough Coastal Management Program. These include:

- the **Plan Document**, which contains the policies and a map of the coastal boundaries
- the **Background Report**, which describes the important resources of the North Slope Borough
- the **Coastal Map Atlas**, which are maps of the important resources of the North Slope Borough, and
- the **Implementation Manual**, which explains how the North Slope Borough will use the Coastal Management Program
- **ongoing coastal management planning projects**, such as the Areas Requiring Special Attention Plan that is being prepared

You can get these reports from the following places:  
your school library  
the village Borough Coordinator  
North Slope Borough Planning Dept.

For more information, contact:

Planning Department  
North Slope Borough  
P.O. Box 68  
Barrow, Alaska 99723  
852-2611

# **NORTH SLOPE BOROUGH**

## **COASTAL MANAGEMENT PROGRAM 1989 PLANNING ACTIVITIES**

### **Areas Meriting Special Attention (AMSA's)**

As part of the its coastal management program, the North Slope Borough is starting a planning process called Areas Meriting Special Attention. Areas Meriting Special Attention (AMSA's) are areas singled out during coastal management program development for detailed planning. It is an opportunity to take a closer look at a special area and plan for the uses of its resources.

AMSA's are used to resolve conflicts between uses or to protect single-purpose values of public importance, only when other coastal management tools are not adequate.

- Conflict Resolution. AMSA's are appropriate for areas where uses of important resources may conflict. Designation as an AMSA will address conditions that reduce conflict between uses, particularly if several different resource managers or owners are involved.
- Management Coordination. The North Slope Borough Coastal Program will use AMSA status to recognize and coordinate existing management controls or to emphasize the Borough's desire to participate in planning for the area conducted by federal, state and private concerns.
- Resource Allocation. There are areas and resources which are highly important to local residents because they are scarce or irreplaceable. Development in these areas may be allowed but further evaluation of the areas resources may be necessary to guarantee that they are utilized in the most efficient manner.

### **AMSA's Identified in the North Slope Borough CMP**

After meetings in Borough villages held during the development of the North Slope Borough Coastal Management Program, two areas were nominated as "candidates" for Areas Meriting Special Attention: Cape Thompson and Kasegaluk Lagoon. Villages identified these areas as having the following values:

- unique, scarce and fragile resources
- significant natural hazards
- importance to subsistence activities
- important fish and wildlife habitats

It was the Borough's intent to identify these areas as potential AMSA's, and pursue the AMSA planning process after the Borough Coastal Management Program received approval from both the state and federal governments.

In addition to these two areas, Borough residents have long considered the Colville River Delta as an area appropriate for nomination as an Area Meriting Special Attention. It provides important and productive habitat for many fish and wildlife species. Residents of the village of Nulqsut and other Borough communities use the Colville River Delta throughout the year for subsistence harvest activities, particularly for fish and marine mammals. The delta and surrounding uplands have been the subject of past petroleum exploration activities, with three wells drilled and a fourth proposed for this winter. The Colville River Delta is roughly three miles from the boundary of the Kuparuk field, and is included in a State oil and gas lease sale scheduled for June of 1991.

### **Schedule for AMSA Plans**

The Borough has started working on AMSA plans for Kaseguluk Lagoon, Cape Thompson, and the Colville River Delta. Planning activities for the next 6 months include:

- additional information on these areas will be gathered
- a planning team will be formed that includes representatives of the affected villages, the Borough, state and federal agencies, and private industry.
- any existing or potential conflicts in the AMSA will be identified
- public workshops will be held in the villages of Point Hope, Point Lay, Nulqsut, and Barrow to talk about these AMSA's and ask for village suggestions
- For the Kaseguluk Lagoon and Cape Thompson AMSA's, draft management guidelines and plan implementation will be developed

### **Village Workshops**

Public workshops will be held in the villages of Point Hope, Point Lay, Nulqsut, and Barrow during the first part of this year. The purpose of these workshops will be to talk about these AMSA's and ask for village suggestions. The Borough will also need assistance from the villages in:

- reviewing information on village use of these areas and importance to the villages
- identifying existing or potential resource use conflicts
- suggesting management guidelines that should be developed for these AMSA's

When the Borough has worked with the villages to set a meeting date, a public notice for the meeting will be sent out. If you would like further information on the AMSA planning process, please contact:

Planning Department  
North Slope Borough  
P.O. Box 89  
Barrow, Alaska 99723  
852-2611